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VOCATIONAL EDUCATION AND WORKFORCE PLANNING INFORMATION REPORT 1981 LOWELL LMA

LABOR AREA RESEARCH PUBLICATION

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Job Market Research Massachusetts Division of Employment Security

THE COMMONWEALTH OF MASSACHUSETTS
DIVISION OF EMPLOYMENT SECURITY
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VOCATIONAL EDUCATION PLANNING AND WORKFORCE INFORMATION REPORT 1981

LOWELL, MASSACHUSETTS LABOR MARKET AREA

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Introduction

A community's vocational education system has two primary goals; to provide future job seekers with the skills that lead to their employment upon graduation, and to supply the needed trained manpower to the area's employers. The equation that relates these goals is seldom in balance and can result in either significant (structural) unemployment and/or a large number of jobs which go unfilled. Thus, a shared objective of both local employers and schools alike is to reduce potential unemployment by guiding students into occupations which are relatively unaffected by recessionary forces while providing local employers with a mix of occupational skills that best promotes economic efficiency.

No report on vocational education is as valuable a resource as the relationship between school personnel and local industry. However, school and business community personnel can be even more effective in achieving their goals when they supplement their first hand observations with collected labor market information. To that end, this report's purpose is to provide school, business, and community planners with information to help them better anticipate economic trends and to supplement local input in planning vocational edication programs.

The information contained in this report includes:

1. recent trends in industry employment, in the Lowell LMA,

2. an occupational profile of selected recession resistant/resilient industries,

3. an analysis of the labor demand by occupations to 1985,

4. an examination of the findings of the statewide job openings survey,

5. a review of the major institutional sources of the labor supply in the Lowell LMA.

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I. Recent Trends in Industry-Employment

Recession Resistant and Recession Resiliant Industries

To evaluate local labor market conditions for planning vocational education programs, it is necessary to analyze recent trends in industry employment levels to determine which industries have experienced significant growth or decline. A major consideration in planning vocational education programs is that students not be trained for jobs that are overly sensitive to economic downturns without their informed consent.

Examining employment trends over the 1974-1979 period indicates which industries, and by deduction which occupations, are recession resistant - not affected by cyclical downturns, recession resiliant - recover quickly from cyclical downturns, or declining and thus not likely to be good prospects for vocational education.

The results of the analysis for selected industries by 3-digit Standard Industrial Classification (SIC) Code in the Lowell Labor Area is presented in Table 1. The data source is the ES-202 report - a quarterly report of employment and wages covered by the unemployment insurance law which now includes approximately 98 percent of employment in the Commonwealth.

Occupational Profiles of Recession Resistant/Resiliant Industries

The next step is to interpret the industrial employment trends into specific types of occupations suitable for vocational education. This can be done by using the Division of Employment Security's occupational profiles of the composition of specific industries. These profiles present the staffing pattern of an industry with the major occupations within the industry expressed as percentages of the total industry employment. Estimates of the number of jobs in an occupation within an industry can be derived by multiplying an industry's total employment by its corresponding occupational percentages. Total employment for a specific occupation within an area can be obtained by adding the occupational employment estimates of all the industries in which the occupation is found. Table 2 presents a compilation of the results of analysis of the recession resilient, and recession resistant industries in the Lowell area and the occupations within these industries for which vocational education is desirable.

Table 1

Recession Resistant, Recession Resiliant and Post-Recession
Growth Industries Lowell LMA
Annual Average Employment
1974, 1975, 1977, 1979

SIC Code*		Employment 1974	1975	1977	1979
15	General Building Contractors	654	477	604	719
152	Gen. Building Contractors Residential	151	278	367	453
17	Special Trade Contractors	1,664	1,401	1,561	1,878
222	Weaving Mills Synthetic	667	597	769	941
273	Commercial Printing	679	636	706	826
35	Machinery	4,063	3,781	4,237	7,367
354	Metal Working Machinery	352	250	177	290
355	Special Ind. Machinery	171	142	137	96
356	General Industrial Machinery	197	151	329	492
357	Office, Computing & Accounting Machines	3,159	3,008	3,399	6,260
36	Electrical & Electric Machinery	3,470	3,467	1,940	2,377
366	Communication Equipment	1,958	2,180	130	396
367	Electrical Components & Accessories	1,111	1,012	1,516	1,871
38	Instruments	322	539	642	721
382	Measuring and Controlling Instruments	21	26	66	151
384	Medical Instruments	278	477	514	507
386	Photographic Equipment	18	16	15	13
508	Wholesale Machinery Equipment	266	284	366	356
56	Apparel and Accessory Stores	531	497	458	546
58	Eating and Drinking Places	2,555	2,810	3,223	3,536
701	Hotels and Motels	87	89	93	112
73	Business Services	585	465	802	1,276
734	Services to Buildings	77	76	94	173
736	Personnel Supply Services	3	7	11	149
737	Computer Prog. Services	NA	30	79	176
739	Miscellaneous Business Services	4,598	4,856	5,109	5,648

Table 1
(continued)

Recession Resistant, Recession Resiliant and Post-Recession
Growth Industries Lowell LMA
Annual Average Employment
1974, 1975, 1977, 1979

SIC Code*		Employment			
		1974	1975	1977	1979
80	Health Services	4,598	4,856	5,109	5.648
806	Hospitals	2,676	2,829	2,938	3,041
805	Nursing Facilities	--	1,216	1,215	1,483
801	Physicians Offices	286	307	328	394
81	Legal Services	165	172	176	206
891	Engineering and Architectural Services	98	96	100	147

* Some changes in data due to SIC Code changes.

Table 2: Occupational Profile of Selected Industries in Massachusetts

SIC	Industry	Occupational Group Profile	Percent of Employment	Occupation for Which Vocational Education is Desirable
222	Weaving Mills-Synthetic	Managers & Officers	4.66	Supervisor, Nonworking
		Professional Occupations	2.78	Loom Fixer
		Technical Occupations	1.55	Inspector
		Service Occupations	1.84	Card Tender Production Packager
		Maintenance and Production	75.81	Sewing Machine Oper.
		Clerical Occupations	11.52	Weaver Semi-Skilled Worker
		Sales Occupations	1.84	General Office Clerk Shipping Packer
231	Mens' & Boys' Suits & Coats	Managers & Officers	3.26	Supervisor, Nonworking Repairer & Setter
		Professional Occupations	1.63	Production Packager Card Tender
		Service Occupations	1.95	Frame Spinner Semi-Skilled Workers
		Maintenance and Production	79.15	General Clerk Clerical Worker
		Clerical Occupations	12.05	Sales Representative
		Sales Occupations	1.95	
276	Manifold Business Forms	Managers & Officers	8.96	Offset Lithographic Press Operator
		Professional Occupation	2.65	Letter Press Operator Press Asst. Operator
		Technical Occupations	0.41	Bindery Worker
		Service Occupations	1.32	Bookkeeper
		Maintenance & Production	66.40	General Clerk
		Clerical Occupations	16.00	Secretary Typist
		Sales Occupations	4.23	Shipping and Receiving Clerk
283	Drugs	Managers & Officers	8.56	Supervisor, Maint. & Production
		Professional Occupations	9.45	Maintenance Mechanic Truck Driver
		Technical Occupations	3.45	Industrial Truck Oper.
		Service Occupations	2.25	Maintenance Repairer Production Packager
		Maintenance & Production	57.60	Semi-Skilled Operative
		Clerical Occupations	16.14	Accounting Clerk General Clerk
		Sales Occupations	2.56	Secretary, Shipping Packer
335	Nonferrous Rolling Drawing	Managers & Officers	6.90	Supervisor, Nonworking Maintenance Mechanic
		Professional Occupations	5.64	Truck Driver Industrial Truck Operator
		Technical Occupations	2.51	Inspector
		Service Occupations	1.46	Abrasive Grinder, Press Operator
		Maintenance & Production	65.52	Semi-Skilled Worker
		Clerical Occupations	16.82	General Clerk
		Sales Occupations	1.15	Clerical Worker

Table 2: Occupational Profile of Selected Industries in Massachusetts (continued)

SIC	Industry	Occupational Group Profile	Percent of Employment	Occupation For Which Vocational Education is Desirable
344	Structural Metal Prods.	Managers & Officers	7.37	Supervisor, Nonworking
		Professional Occupations	5.92	Filer/Grinder/Buffer Polisher
		Technical Occupations	2.85	Inspector, Machinist
		Service Occupations	1.68	Lathe Operator Punch Press Operator
		Maintenance & Prod.	66.67	Welder, Semiskilled Worker
		Clerical Occupations	11.95	Secretary, General Clerk
		Sales Occupations	3.57	Sales Representative
373	Ship and Boat Building	Managers & Officers	5.19	Carpenter
		Professional Occupations	1.74	Supervisor, Maintenance & Production
		Technical Occupations	0.35	Machinist, Ship Rigger Assembler
		Service Occupations	2.77	Welder/Framecutter
		Maintenance & Production	80.28	Ship Fitter Paint Production
		Clerical Occupations	8.33	Semi-Skilled Operator Plumber/Pipefitter
		Sales Occupations	1.39	General Clerk Stock Clerk
384	Medical Instrument & Supplies	Managers & Officers	7.65	Supervisor, Nonworking Inspector
		Professional Occupations	15.53	Machinist, Production Packager
		Technical Occupations	9.72	Machine Tool Operator Assembler
		Service Occupations	1.85	Semi-Skilled Worker Accounting Clerk
		Maintenance & Production	49.41	General Clerk Secretary
		Clerical Occupations	14.74	Typist Production Clerk
		Sales Occupation	1.10	Sales Representative
396	Costume Jewelry & Notions	Managers & Officers	7.18	Supervisor, Maintenance & Production
		Professional Occupations	2.59	Inspector, Machinist
		Technical	0.86	Production Packager Assembler
		Service Occupations	1.43	Punch Press Operator, Skilled worker,
		Maintenance & Production	70.97	Semi-skilled Operative
		Clerical Occupations	13.49	General Clerk, Secretary
		Sales Occupations	3.45	Production Clerk Shipping Packer
415	School Buses	Managers & Officers	3.82	Bus Driver, Automotive Mechanic
		Professional & Technical	1.59	Maintenance and Production Worker
		Maintenance & Production	91.08	General Clerk, Dispatcher
		Clerical Occupations	3.50	
472	Arrangement of Transportation	Managers & Officers	11.98	Truck Drivers
		Professional Occupations	2.34	Maintenance and Production Occup.
		Service Occupations	2.86	Bookkeeper, General Clerk
		Maintenance & Production	15.63	Secretary, Travel Consultant
		Clerical Occupations	61.98	Shipping Packer
		Sales Occupations	5.21	Traffic Agent Clerical Worker

Table 2: Occupational Profile of Selected Industriss in Massachusetts
(continued)

SIC	Industry	Occupational Group Profile	Percent of Employment	Occupation For Which Vocational Education is Desirable
483	Radio & Television and	Managers & Officers	12.04	Secretary, General Clerk
489	Communication Serv. NEC	Professional Occupations	42.80	Traffic Clerk, Clerical Worker
		Technical Occupations	16.38	Salesperson
		Service Occupations	1.33	
		Maintenance Production	1.00	
		Clerical Occupations	16.72	
		Sales Occupation	9.69	
501	Motor Vehicles & Automotive Equip.	Nonpublished Data		
531	Department Stores	Managers & Officers	7.86	Store Detective
		Professional Occupations	2.58	Stock Clerk, Accounting Clerk
		Technical Occupations	0.66	Cashier, General Clerk
		Service Occupations	7.03	Storeroom Clerk, Marking Clerk
		Maintenance & Production	13.47	Clerical Worker Sales Representative Sales Clerk
		Clerical Occupations	28.33	
		Sales Occupations	40.02	
541	Grocery Stores	Managers and Officers	6.67	Stock Clerk Semi-skilled Worker
		Professional Occupations	1.00	Cashier Clerical Worker
		Technical Occupations	0.04	Sales Clerk
		Service Occupations	9.18	
		Maintenance & Production	34.17	
		Clerical Occupations	39.49	
		Sales Occupations	9.42	
543	Fruit & Vegetable Store	Nonpublished Data		
549	Misc. Food Stroes	" "		
553	Auto & Home Supply	" "		
554	Gasoline Service Stations	" "		
564	Childrens' & Infant's Wear and	Managers & Officers	7.52	Store Manager, Stock Clerk, Bookkeeper
565	Family Clothing Stores	Professional Occupations	3.67	Cashier General Clerk
		Services Occupations	1.33	Shipping and Receiving Clerk
		Maintenance & Production	31.60	Stock Clerk Sales Representative
		Clerical Occupations	17.55	Sales Clerk
		Sales Occupations	38.29	
581	Eating and Drinking Places	Managers & Officers	6.84	Restaurant Manager
		Professional Occupations	0.98	Bartender, Hostess/Host
		Technical Occupations	0.07	Kitchen Helper Waiter/Waitress
		Service Occupations	86.87	Short Order Cook, Food Preparer
		Maintenance & Production	0.08	Cook, Bookkeeper
		Clerical Occupations	5.04	Cashier
		Sales Occupations	0.09	
591	Drug Stores & Proprietary	Nonpublished data		
593	Used Merchandis Stores	" "		

Table 2: Occupational Profile of Selected Industries in Massachusetts
(continued)

SIC	Industry	Occupational Group Profile	Percent of Employment	Occupation For Which Vocational Education is Desirable
603	Mutual Savings Bank	Managers & Officers	17.52	Clerical Supervisor
		Professional Occupations	3.57	Accounting Clerk Bookkeeper
		Technical Occupations	0.09	General Clerk New Account. Teller
		Service Occupations	2.79	Secretary Switchboard Operator
		Maintenance&Production	0.35	Teller, Typist
		Clerical Occupations	75.50	
		Sales Occupations	0.17	
612	Savings & Loan Assoc.	Managers & Officers	22.30	Service Worker
		Professional Occupations	2.64	Bookkeeper Accounting Clerk
		Service Occupations	4.08	General Clerk New Account Teller
		Maintenance & Production	0.48	Secretary, Teller
		Clerical Occupations	70.50	Clerical Worker
628	Security & Commodity Services	Managers & Officers	11.45	Computer Operator Keypunch Operator
		Professional Occupations	25.55	Stenographer Accounting Clerk
		Technical Occupations	1.32	File Clerk General Clerk
		Service Occupations	1.76	Secretary Typist
		Clerical Occupations	58.59	Bookkeeper
		Sales Occupations	1.32	
631	Life Insurance	Managers & Officers	8.46	Accounting Clerk Claims Clerk
		Professional Occupations	12.58	File Clerk General Clerk
		Technical Occupations	2.99	Secretary Typist
		Service Occupations	1.83	Clerical Occupations Salesperson
		Maintenance & Production	1.23	
		Clerical Occupations	61.12	
		Sales	11.74	
635	Surety Insurance	Nonpublished Data		
671	Holding Offices	Managers & Officers	17.27	Accounting Clerk Bookkeeper
673	Trusts	Professional Occupations	27.34	General Clerk, Secretary
		Service Occupations	2.16	Typist
		Clerical Occupations	48.92	
		Sales Occupations	4.32	
752	Auto Parking	Nonpublished Data		
753	Auto Repair Shops	Managers & Officers	14.73	Supervisor, Nonworking Auto Mechanic
		Professional Occupations	1.18	Body Repairer Vehical Cleaner
		Technical Occupations	0.07	Auto Painter Fuel Pump Attendent
		Service Occupations	0.65	Bookkeeper AccountingClerk
		Maintenance & Production	67.41	Cashier, General Clerk
		Clerical Occupations	14.59	
		Sales	1.31	

Table 2: Occupational Profile of Selected Industries in Massachusetts
(continued)

SIC	Industry	Occupational Group Profile	Percent of Employment	Occupation for Which Vocational Education is Desirable
801	Offices of Physicians	Managers & Officers	5.02	Medical Assistant Bookkeeper
802	Offices of Dentists	Professional Occupations	22.78	General Clerk Receptionist
		Technical Occupations	14.86	Secretary
		Service Occupations	39.08	
		Maintenance Production	3.97	
		Clerical Occupations	14.28	
806	Hospitals	Nonpublished Data		
807	Medical & Dental Labs.	" "		
811	Legal Services	Managers & Officers	5.01	Machine Operator Typist
		Professional Occupations	35.06	Accounting Clerk Bookkeeper
		Service Occupation	0.25	General Clerk Receptionist Secretary
		Clerical Occupations	59.68	Messenger Switchboard Operator/ Receptionist
822	College Universities			
832	Libraries & Information			

II. Labor Demand by Occupation to 1985

While recognition of trends in industry and occupational employment levels is important, planners need to have an idea of future occupational demand, as well, in the labor market area. The information can be obtained from the Division of Employment Security's employment projections. The projections estimate industry and occupational employment needs from 1974 to 1985 for 201 industries and 421 occupations. The employment trend from 1958 to 1974 was used as the basis for the projections. The projections are expressed in terms of annual labor demand, which consists of openings due to both growth and separation. Separation or replacement demand account for almost 80 percent of the total annual openings.

A detailed breakout of demand for various occupations in the Lowell LMA is contained in Table 3 . The table includes a brief job description; number of annual openings; suggested education or training; approximate salary range; and employment outlook. Generally it is wise to treat precise occupational projections with some caution. The number of job openings is a function of both secular and cyclical trends, as well as the cumulative effects of technological change and the results of new plant openings, shutdowns and relocations.

III. Unfilled Openings on Lowell Job Bank

Yet another way of determining occupational areas of significant net demand is to tabulate occupations which have shown a large number of job openings on the Lowell Job Bank during fiscal year 1980 as listed by the Employment Service Automated Reporting System (ESARS). Table 4 lists such occupations which are suitable for vocational education and training.

Jobs ranked as most difficult to fill could be assumed to be those most in demand. However, the data is severely limited in its general application in determining labor demand. Jobs with employers having federal contracts require mandatory listing with the Employment Service. An unknown percentage of private employers list their job openings with the Division of Employment Security. Finally, the reasons why the unfilled jobs remain unfilled are not known. Thus, the data in Table 4 is only a rough indicator of demand.

Table 3
Vocational/Technical Occupations in the Lowell LMA

Occupational Description 1/	Annual Labor Demand 2/ 1976-1985 Job Openings: Average Annual	Due to Growth	Due to Separation	Suggested Education or Training 3/	Program of Study	Approximate Salary 4/	Employment Outlook
Administrative Assistants - (Clerical Supervisor) Job duties include the coordination of office tasks and the supervision of clerical workers.	192	60	132	Career or Technical School, Associate Degree, or Bachelor's Degree	Executive Secretarial or Administrative Assisting	$9,300 - 14,000/year	Moderate Demand
Advertising Assistants - (Advertising Agents) Assists in the planning and executing advertising programs to promote the sale of a company's products or services.	37	15	22	Career of Technical School, Associate Degree, or Bachelor's Degree	Advertising or Public Relations	$6,900 8,500/year	Moderate Demand
Air Conditioning, Heating, & Refrigeration Mechanics - Install, repair, and maintain industrial, commercial, and home regrigeration, cooling, and heating systems.	152	86	66	OJT, Apprenticeship Training, or Career or Technical School	Air Conditioning/Refrigeration/Heating	$8.50 - 11.50/hour	Moderate Demand
Aircraft Mechanics - Service and repair aircrafts and engines to keep them in proper maintenance.	7	- 4	11	OJT, Associate Degree, or Career or Technical School (FAA Certification)	Aircraft Mechanics	$15,000 - 20,000/year	Stable Demand
Animal Technicians - (Health Technicians)	85	41	44	Career or Technical School, Associate Degree or OJT	Animal Science	$7,300 - 10,200/year	Moderate Demand
Autobody Repairers - Repair cars damaged by accidents or rust.	66	44	22	OJT, or Vocational Technical Diploma	Auto Body Repair	$6.00 - 8.2/hour	Moderate Demand
Auto Mechanics - Repair cards, small trucks, and buses to keep them in good running condition.	479	292	187	OJT, Vocational Technical Diploma or Career or Technical School	Auto Mechanics or Automotive Technology	$6.00 - 7.75/hour	Moderate Demand
Bakers - Prepare bake foods according to recipes to produce bread, cakes and pastries.	18	-15	33	OJT, Vocational Technical Diploma or Career or Technical School.	Baking	$9,000 - 13,500/year	Moderate Demand
Bank Tellers - Responsible for taking deposits, making withdrawals, and cashing checks.	240	53	187	OJT, High School Diploma, Career or Technical, or Associate Degree	Banking Accounting Technologies	$8,700 +/ year	Moderate Demand

Vocational/Technical Occupations in the Lowell LMA

Occupational Description 1/	Annual Labor Demand 2/ 1976-1985 Job Openings: Average Annual	Due to Growth	Due to Separation	Suggested Education or Training 3/	Program of Study	Approximate Salary 4/	Employment Outlook
Barbers - Cut and style hair. They may also give shampoos, dye and tint hair, and trim or shape moustaches and beards.	18	-26	44	Career or Technical School, or Apprenticeship Training (State License)	Barbering	$175 - 300 per week	Stable Demand
Bartenders - Prepare all kinds of alcoholic and nonalcoholic drinks for customers in restaurants, lounges, and private function halls	111	34	77	OJT, or Career and Technical School	Bartending	$3.50 +/hr. + tips	Stable Demand
Billing Clerks - Prepare invoices (bills to be sent to customers for goods or services purchased	112	35	77	High School Diploma, Associate Degree, or Career and Technical School	Accounting Computing, or Accounting Clerk	$8,300 - 11,700/year	Great Demand
Bookbinders - Perform the duties of covering books, pamphlets, magazines, and other bound printed material	46	2	44	OJT, Apprenticeship Training, or Career Technical School	Graphic Arts or Printing	$4.00 +/per hour	Stable Demand
Bookkeepers - Record the financial transactions of a business	814	33	781	Career or Technical School, Associate Degree, or Bachelor Degree	Accounting or Bookkeeping	$7,500 - 9,800/year	Great Demand
Bricklayers (Brick and Stonemasons and Apprentices) - Uses masonry materials to build walls, fireplaces, chimneys, arches, piers, and other structures	49	27	22	OJT, Vocational Technical Diploma, or Apprenticeship Training	Masonry	$9.90 - per hour	Moderate Demand
Bus Drivers - Transport passengers over city and suburban streets to get them to their destination	81	- 7	88	OJT, (Class 1 Driver's License)	Transportation	$4.50 5.00/hour	Moderate Demand
Cabinet Makers - Craftspeople who make and install wood furnishings such as cabinets, counters, closets, etc.	10	- 1	11	Vocational Technical Diploma, Career or Technical School, or Apprenticeship Training	Cabinet Making	$5.00 - 10.50/hour	Stable Demand
Carpenters - (Carpenters & Apprentices) Use hand and power tools to build or repair wooden structures	462	198	264	OJT, Career or Technical School or Apprenticeship Training	Carpentry	$5.50 - 8.47/hour	Great Demand

Table 3 (continued)
Vocational/Technical Occupations in the Lowell LMA

Occupational Description 1/	Annual Labor Demand 2/ 1976-1985 Job Openings			Suggested Education or Training 3/	Program of Study	Approximate Salary 4/	Employment Outlook
	Average Annual	Due to Growth	Due to Separation				
Cashiers - Use cash registers to ring up customer's orders, take the payment and give the right amount of change. At the end of their shift, they are responsible for a tally of their sales and to fill out tally sheets.	981	123	858	High School Diploma or Vocational Technical Diploma	Cashiering	$3.25 - 5.40/hour	Great Demand
Cement Masons - (Cement and Concrete Finishers) Use concrete and cement to build structures such as foundations, sidewalks, and bridge supports.	32	21	11	OJT and Apprenticeship Training	Masonry or Concrete Technology	$7.00 - 9.00/hour	Stable Demand
Chemical Laboratory Technicians - (Chemical Technicians) Perform various tasks used in analyses or manufacture of chemical products	54	32	22	Associate or Bachelor's Degree	Chemistry	$4.35 - 7.55/hour	Stable Demand
Child Care Workers - Supervise and tend preschool children, usually while the parents are working.	167	57	110	Associate or Bachelor's Degree	Pre-Elem. Education	$8,700/year	Moderate Demand
Clerk-Typists - Type letters, forms, and other matter used in the course of business	855	63	792	High School Diploma or Career or Technical School	Clerical Typing	$160- 170 per week	Great Demand
Compositors and Typesetters - Determine type size, style, and compositional pattern of articles to be printed in newspapers, magazines, or other matter.	60	-28	88	OJT, Vocational Technical Diploma or Technical School	Graphic Arts or Printing	$4.00 8.50/hour	Stable Demand
Computer Operators _ (Computer, Peripheral Equipment) Monitor and control computers to process business, scientific, engineering or other data according to operating instruction	127	61	66	High School Diploma or Career/Technical School	Data Processing	$8,900 - 13,000/year	Moderate Demand
Construction Workers - Perform various tasks under the supervision of contractors in the construction of buildings and highways.	624	195	429	OJT or Vocational Technical School	Construction Trade	$3.80 - 4.50/hour	Great Demand
Cooks - Prepare meals, usually in restaurants, hotels, and other institutions	385	88	297	Associate Degree, or Vocational Technical School	Culinary Arts	$4.15 - 6.00/hour	Great Demand

Table 3 (continued)

Vocational/Technical Occupations in the Lowell LMA

Occupational Description 1/	Annual Labor Demand 2/ 1976-1985 Job Openings			Suggested Education or Training 3/	Program of Study	Approximate Salary 4/	Employment Outlook
	Average Annual	Due to Growth	Due to Separation				
Cosmetologists - Style people's hair, may also give manicures, do facials, or change color of customer's hair.	296	54	242	Vocational Technical School or Career/ Technical School (State License)	Cosmetology	50% of the cost of hair style and tips	Moderate Demand
Data Processing Machine Repairers (Computer Service Technicians) Inspect, adjust, and clean computers and other electronic machines using special testing equipment and tools.	77	66	11	Career/Technical Schools or Associate Degree	Electronics and Machine Technology	$205 - 209/week	Great Demand
Dental Assistants - Help dentists during the examination and treatment of patients.	176	44	132	Associate Degree (Certification)	Dental Assisting	$9,100 - 10,000/year	Moderate Demand
Dental Hygienists - Licensed to clean teeth and instruct patients in dental care.	61	28	33	Associate Degree (Certification)	Dental Hygiene Technology	$10,000 - 13,000/year	Moderate Demand
Drafters - Convert the rough drawings of architects and engineers into finished plans so that craftspeople can use them to produce things such as engines, machinery, and buildings.	123	68	55	Vocational Technical Diploma Career/Technical School, or Associate Degree	Drafting, Architectural Technical, or Design Technology	$10,000 - 15,000/year	Demand
Drill Press Operators - Run machines that bore holes into metal according to a set of plans and blueprints.	9	- 2	11	OJT, or Vocational Technical Diploma	Machine Tools or Machine Shop	$8,800 - 15,000 year	Stable Demand
Electricians - (Electricians and Apprentices) Lay out, assemble, install, and test electrical fixtures and wiring systems	260	139	121	Vocational Technical Diploma, Career/ Technical School or Apprenticeship Training (State License)	Electrical Wiring	$15,100 - 19,700 year	Great Demand
Electronics Technicians - Apply electronic theory and principles of electric circuits, electrical testing procedures, and electrical subject matter.	346	258	88	Vocational Technical Diploma, Career/ Technical School or Associate Degree	Electronics or Electronic Technician	$9,300 - 16,000/year	Great Demand
File Clerks - Care for all materials to be filed or already filed, such as printed documents, letters, reports and receipts	139	-26	165	High School Diploma or Career/Technical School	Clerical or Business Courses	$6,400 - 8,700/year	Great Demand
Filer, Polisher, Sander, Buffer Work in factories and processing plants using power tools to smooth and finish metal parts.	39	- 5	44	OJT, or Vocational Technical Diploma	Machine Tools or Machine Shop	$113 - 128/week	Moderate Demand

Table 3 (continued)
Vocational/Technical Occupations in the Lowell LMA

Occupational Description 1/	Annual Labor Demand 2/ 1976-1985 Job Openings			Suggested Education or Training 3/	Program of Study	Approximate Salary 4/	Employment Outlook
	Average Annual	Due to Growth	Due to Separation				
Floor Layers - Workers who lay smooth, decorative floor such as tile, wood flooring or linoleum.	4	2	2	OJT, Vocational Technical Diploma or Apprenticeship Training	Carpet or Floor Laying	$5.40 - 9.00/hour	Stable Demand
Food Workers - Sell prepared food to customers. They take orders, prepare drinks, set up silverware, and may also have to operate a cash register	295	31	264	OJT or Vocational Technical School	Food Service	$3.70 +/hr.	Great Demand
Furniture and Wood Finishers - Repair and refinish antique, damaged, or worn furniture.	8	- 3	11	OJT, Vocational Technical Diploma or Career/Technical School	Furniture Refinishing	$4.25 - 6.00/hour	Stable Demand
Garage and Gas Station Attendants - They fill cars or trucks with gasoline, check oil and coolant levels, clean windshields, check tires and batteries, and may also do minor repair work.	41	- 3	44	OJT or Vocational Technical Diploma	Service Station Technology or Auto Mechanics	$2.90 - 4.00/hour	Stable Demand
Glaziers - Install windows, glass panels or mirrors using a variety of hand or power tools	9	9	0	OJT, Vocational Technical Diploma or Apprenticeship Training	Glazing	$4.55 - 6.25/hour	Stable Demand
Grinding Machine Operators - Work in factories and processing plants using power grinders to smooth and shape metal parts.	28	6	22	OJT or Vocational Technical Diplomas	Machine Tools or Machine Shop	$5.00 - 7.00/hour	Moderate Demand
Guards - Protect property from damage or loss from fire, and theft, may also help to control and maintain large crowds	176	-66	242	OJT or Career/ Technical School	Security or Loss	$3.40 - 4.10/hour	Great Demand
Household Appliance Mechanics - Maintain and fix electrical or gas appliances such as refrigerators, clothes dryers, and washing machines.	60	27	33	OJT or Career/ Technical School	Appliance Repair	$4.00 - 7.00/hour	Moderate Demand
Keypunch, Data Entry Operators - Use a machine with a keyboard much like an electric typewriter, pressing proper keys in correct order to punch data into cards	101	-119	220	Vocational Technical Diploma or Career/ Technical School	Key Punch Operator	$6,750 - 11,000/year	Moderate Demand

Vocational/Technical Occupations in the Lowell LMA

Occupational Description 1/	Annual Labor Demand 2/ 1976-1985 Job Openings: Average Annual	Due to Growth	Due to Separation	Suggested Education or Training 3/	Program of Study	Approximate Salary 4/	Employment Outlook
Lathe and Milling Machine Operator - Work in machine shop or metalworking factories operating machines that turn, shape, and cut metal parts.	18	- 4	22	OJT or Vocational Technical Diploma	Lathe and Milling Machine	$12,000 - 20,000/year	Moderate Demand
Lens Grinder and Polisher - Use various machines to make and polish eyeglasses or contact lenses.	47	25	22	OJT or Career/ Technical School	Optics Technology	$4.50 - 7.50/hour	Moderate Demand
Machinists and Apprentices - Make and repair metal parts, tools and machines from written specifications	123	13	110	Vocational Technical Diploma or Apprenticeship Training	Machine Shop	$10,000 - 15,000/year	Great Demand
Nurses Aides and Orderlies - Provide basic patient care under direct supervision. May bathe, feed and transport patients and make beds	723	41	682	OJT, Vocational Technical Diploma or Career/Technical School	Nursing Aid	$3.00 - 3.25/hour	Great Demand
Office Machine Repairers - Are skilled workers who inspect, adjust and repair office machines such as typewriters and copiers.	62	51	11	Vocational Technical Diploma or Career/ Technical School	Business Machine Repair	$211.00 - 310/week	Moderate Demand
Painters and Apprentices - (Construction Crafts Workers) Use paint and brushes to create advertising or commercial signs. Other workers may apply paints and protective coatings to all kinds of structures.	101	2	99	OJT, Career/Technical School, or Apprenticeship Training	Building Construction or Painting/ Decorating	$4.75 - 7.50/hour	Great Demand
Paperhangers - Prepare interior wall surfaces, cut wall paper according to patterns, and put the paper onto the walls of homes and businesses.	17	6	11	OJT or Vocational Technical Diploma	Building Construction or Painting/ Decorating	$6.00 - 9.50/hour	Stable Demand
Payroll and Timekeeping Clerks - Calculate for specific pay periods how much money to pay each employee according to a pay schedule.	155	12	143	Associate Degree or Career/Technical School	Accounting or Bookkeeping	$8,100 - 11,700/year	Great Demand
Photoengravers and Lithographers - Prepare metal plates for letterpress or gravure printing, using photographic and acid etching methods.	21	10	11	Career/Technical School or Associate Degree	Photographic Technology	$4.80 +/hour	Stable Demand

Table 3 (continued)
Vocational/Technical Occupations in the Lowell SMSA

Occupational Description 1/	Annual Labor Demand 2/ 1976-1985 Job Openings			Suggested Education or Training 3/	Program of Study	Approximate Salary 4/	Employment Outlook
	Average Annual	Due to Growth	Due to Separation				
Photographic Process Workers - Work in commercial processing laboratories, mixing chemicals, unloading film cartridges, and running processors and photo enlargers.	77	22	55	Career/Technical School or Associate Degree	Photographic Technology	$3.50 - 5.10/hour	Moderate Demand
Plumbers and Pipefitters - Install, repair, and maintain piping systems used to carry water, steam, and gases.	157	80	77	Vocational Technical Diploma or Apprenticeship Training	Plumbing	$4.75 - 8.20/hour	Great Demand
Printing Press Operators - Work for newspaper, magizine, publishers, or printing companies operating one or more of the many types of printing presses.	85	30	55	OJT, Vocational Technical Diploma	Graphic Arts	$7.00 - 8.00/hour	Moderate Demand
Radio and Television Repairers - Work on radios, T.V.'s, C.B. sets, and stereos to keep them in running condition.	46	24	22	Vocational Technical Diploma or Career/ Technical School	Radio/T.V. Repair	$4.00 - 10.00/hour	Moderate Demand
Radiologic Technologists and Technicians - operate the X-Ray equipment used in hospitals and clinics.	34	-21	55	Associate Degree or Bachelor's Degree	Radiologic Technology	$10,000 - 14,000/year	Moderate Demand
Real Estate Agents & Brokers - People who represent home owners and landlords in the buying, selling and renting of buildings and land.	75	9	66	Associate Degree Bachelor's Degree, or Career/Technical School (State License)	Real Estate	Commission Average $10,300 - 20,000/year	Stable Demand
Roofer Slaters - Install or repair roofs of homes and other buildings. They may use slate tiles, shingles, asphalt or other materials	35	24	11	OJT, or Apprenticeship Training	Building Construction	$5.00 - 7.05/hour	Moderate Demand
Sales Clerks - Help customers select merchandise, write up sales receipts and operate cash registers	1,722	413	1,309	OJT, High School Diploma, or Vocational Technical	Distributive Education	$7,000 - 10,000/year	Great Demand
Secretaries, General - Take dictation, type letters, file records, plan appointments, and perform other clerical tasks.	2,507	472	2,035	High School Diploma or Career/Technical School	Secretarial Technology	$7,900 - 13,300/year	Great Demand

Table 3 (continued)
Vocational/Technical Occupations in the Lowell LMA

Occupational Description 1/	Annual Labor Demand 2/ 1976-1985 Job Openings			Suggested Education or Training 3/	Program of Study	Approximate Salary 4/	Employment Outlook
	Average Annual	Due to Growth	Due to Separation				
Secretaries, Legal - Perform clerical and secretarial work for attorneys or law firm.	175	43	132	Career/Technical School or Associate Degree	Legal Secretarial	$9,500 - 15,700/year	Great Demand
Secretaries, Medical - Work for doctors or hospitals, scheduling appointments and preparing medical charts and reports	98	10	88	Career/Technical School or Associate Degree	Medical Secretarial	$9,100 - 12,00/year	Great Demand
Sheet Metal Workers - Work from blueprints and drawings to make and install articles of sheet metal.	65	32	33	OJT, Vocational Technical Diploma or Apprenticeship Training	Sheet Metal or Metalwork Technology	$4.40 - 5.50/hour	Moderate Demand
Stationary Engineers - Operate and maintain equipment in industrial plants and other buildings that are essential to power generation	22	-22	44	OJT, Career Technical School, or Apprenticeship Training	Steam Engineering	$6.50+/hour	Moderate Demand
Stenographers - Take dictation or correspondence, reports, and other material, usually in shorthand. Transcribe dictated material into final form with a typewriter.	3	-30	33	Vocational Technical Diploma or Career/ Technical School	Stenography	$150 - 185/week	Stable Demand
Tile Setters - Install ceramic tiles, stone and other material on walls, floors, and ceilings.	- 1	- 1	0	OJT, Vocational Technical School, or Apprenticeship Training	Floor Laying	$6.45/hour	Stable Demand
Tool & Die Makers - Workers who make the tools and dies used in shaping and forming metal products.	17	6	11	OJT, Voc. Tech. School or Apprencticeship Training	Machine	$6.50 - 10.00/hour	Moderate Demand
Typists - Do a variety of typing jobs and clerical tasks such as filing memos, answering phone calls, and operating calculating machines.	855	63	792	High School Diploma or Career/Technical	Typing	$7,970 - 11,400/year	Great Demand
Upholsterers - Prepare furniture frames with springs, webbing, and other foundation materials. They also finish the furniture with leather, plastic, or other covering material.	13	2	11	OJT, or Vocational Technical School	Upholstery	$5.65 - 8.25/hour	Stable Demand

Table 3 (continued)
Vocational/Technical Occupations in the Lowell LMA

Occupational Description 1/	Annual Labor Demand 2/ 1976-1985 Job Openings			Suggested Education Training 3/	Program of Study	Approximate Salary 4/	Employment Outlook
	Average Annual	Due to Growth	Due to Separation				
Waiters and Waitresses - Serve food and beverages to customers.	730	92	638	OJT, or Vocational Training School	Food Service	$3.15 +/hour plus tips	Great Demand
Welders - Workers concerned with joining, surfacing, fabricating or repairing structures or parts of metal or other weldable material.	169	92	77	OJT, or Vocational Technical School	Welding	$5.31 - 7.00 hour	Great Demand

1/ The Boston Globe, "Career and Education Planning Guide", October 1980.

2/ "Employment Requirements by Occupation, by Industry 1976-1985", Occupation/Industry Research Publication Massachusetts Division of Employment Security, December 1979.

3/ Definitions: On-the-Job Training (OJT) - Training offered by employer, usually under six months

High School Diploma - Graduate from Secondary School

Vocational Technical School - Secondary School with concentration in a comprehensive program

Career or Technical School - Post Secondary School with concentration in specific program of study, usually under two years

Associate Degree - Junior and Community Colleges with specific program of study, usually two years

Bachelor's Degree - Four Year College

Apprenticeship Training - Training established by employer with classroom study, usually four years

4/ Job Matching Service Division of Employment Security

Table 4

Unfilled Job Openings Suitable for
Vocational Education and Training
Lowell Labor Area Fiscal Year 1980

DOT Code	Occupation	Total Openings	Unfilled Openings	Unfilled as Percent of Total
201	Secretaries	65	6	9.2
203	Typists	123	29	23.6
209	Stenography and Typing	415	13	3.1
216	Accounting and Statistical Clerks	41	3	7.3
219	Computing and Account Recording	21	3	14.3
222	Clerical, Shipping and Receiving	58	6	10.3
279	Salesperson, General Merchandise	21	5	23.8
313	Cooking, Hotels and Restaurants	33	6	18.1
355	Attendants, Hospitals	345	9	2.6
556	Casting and Molding	19	1	5.3
609	Production Machine Tender	56	2	3.6
706	Assembler, Small Parts	10	4	40.0
726	Assembly Repair Electronic Components	259	29	11.2
860	Carpentry and Related Work	44	11	25.0
869	Miscellaneous Construction	130	27	20.8
899	Miscellaneous Structural Work	21	2	9.5
905	Truck Driver, Heavy	19	1	5.3

Source: Division of Employment Security ESARS - Table 96, SMSA 4560
Year to Date, September 30, 1980

IV. Job Openings Survey

The most recent tool in identifying occupations that are in demand by industries is the Job Openings Survey (JOS) initiated in Massachusetts in 1979. The survey represents the only available comprehensive source of actual current job openings. It yields estimates of the itensity of demand for workers in various occupational groups as well as relating this demand for workers to other variables such as unemployment, new hires, part time openings, future openings, hard to fill openings, size of establishment, and completions from training programs.

The JOS in Massachusetts collected its data from a stratified random sample of approximately 1,200 private nonagricultural wage and salary establishments (drawn from ES 202 files) by mailing printed schedules to them.

Summary of JOS Findings

The first three rounds of the statewide pilot JOS survey produced an overall vacancy rate of 3.1 percent, with job vacancy rates in selected occupations ranging from a high of 13.3 percent for machinists to a low of 0.6 percent for civil engineers. The 3.1 percent vacancy rate can be considered the median point between high and low rates. A high vacancy rate does not mean that an occupation has a high number of openings. The relationship of the job vacancy rate to the number of openings depends on the employment base of the occupation. However the job vacancy rate is a better measure of demand for certain occupations than is the number of job openings.

Professional, technical, managerial, sales and clerical occupations represented 46.7 percent of all openings in the survey. Some closely related groups of occupations such as computer, mathematical, and research occupations experienced a high vacancy rate (7.7 percent). This may actually represent an undercount because of a low response rate among large high technology establishments.

Vacancy rates among health occupations are high: licensed practical nurses 6.6 percent, therapists and dieticians 7.8 percent, and registered nurses 9.9 percent. A common reason for vacancies among nurse aides and orderlies (6.2 percent) if the high turnover due to low pay and difficult shifts.

Computer related data typists had the highest vacancy rate among clerical occupations (5.4 percent). However, technological changes leave the outlook mixed. Although some losses will occur due to automation, there will still be a replacement demand among typists (2.5 percent) and bookkeepers and accounting clerks (1.9 percent). Considering the large size of the employment base (80,000 statewide), it is noteworthv that the vacancy rate for secretaries (3.3) is higher than the overall vacancy rate (3.1)

Machinery occupations had the highest vacancy rate in the manufacturing area. Machinists led the way with 13.3 percent followed by tool and die makers at 6.4 percent. A lower vacancy rate for machine operators (2.5) is probably due to ambiguous job definitions overstating the vacancy rate for machinists. Nevertheless, machinists occupations have the highest vacancy rate in the survey with a high replacement demand as well.

Of the two major industrial divisions, manufacturing had 31.0 percent of employment with 28 percent of the openings and a 2.8 percent vacancy rate. Nonmanufacturing with 69 percent of employment had 72 percent of the openings and a 3.2 percent vacancy rate. Manufacturing had a higher percentage of the harder to fill openings which resulted from skill shortages in many technical as well as professional occupations.

With respect to vacancy rates and openings versus the size class of the employer, the smaller size classes contain the vast majority of establishments while the larger size classes (250 plus) account for more than 40 percent of total employment. The heaviest concentration of openings were in size classes ranging from 20 to 249 employees.

The concentration of job openings dropped off sharply above this level. Units with 1,000 or more employees accounted for 21 percent of employment but only 12 percent of openings. Generally smaller size classes had the high vacancy rates ranging from almost 10 percent for units with 1-3 employees to 1.8 percent for establishments with more than 1,000 employees.

Vacancy Rates by Occupational Group

For the purpose of highlighting occupations suitable for vocational training, it is helpful to analyze the vacancy rates for certain groups of occupations. The vacancy rates were calculated by dividing the number of job openings for an occupation by the sum of employment plus job openings. Thus JVR=JO/JO+E. A high vacancy rate does not necessarily mean a high number

of job openings. The key figure is the employment base of the occupation, with the job vacancy rate a better measure of demand than the number of openings for occupations that are more selective.

Technologists and Technicians Except Health

This group includes engineering technicians, drafters, surveying technicians, scientific technicians etc. This groups overall vacancy rate of 4.5 percent is probably low in terms of the impact of the growing high technology industries in the state, which were somewhat underrepresented in the JOS. While the survey was not set up to give detailed information on various types of technicians, the JOS report surmises from experience with the survey that a large percentage of the demand was for electronic technicians.

Clerical Occupations

Clerical occupations comprise one of the largest groups in the state. Because of their large employment bases, some occupations dominate in number of actual jobs, while having low vacancy rates. The data typist category, which includes key punch operator, magnetic tape composer operator, terminal operator, and varitype operator had a vacancy rate of 5.4 percent, highest in this category.

Although the increasing use of computerized equipment will speed up the work and eliminate routine duties, the demand for tellers should not be adversely affected. This occupation's vacancy rate of 3.8 percent reflects both a healthy replacement demand and expansion of bank services.

Secretaries and stenographers, with a substantial employment base, experienced a vacancy rate of 3.3 percent, despite the automation of many routine clerical jobs. The demand for secretaries should remain high because the positions require public contact and organizational skills.

Vacancy rates of the other clerical occupations fell below the overall rate (mid-point) of 3.1 percent. Most openings here should come from replacement needs. While typists, bookkeepers, accounting clerks, and "other" clerical show low vacancy rates, their large employment bases should be remembered.

Machinery Occupations

Machinists achieved the highest vacancy rate in the entire JOS, 13.3 percent, which was five times higher than the 2.5 percent rate for machine operators. This could be due to a difference between employer job definitions and survey job definitions which resulted in putting machine operator openings in the machinist category. The difference between the two occupations is that machinists can set up and adapt a machine to specific operations while operators are involved in tending an already set up machine. In the Lowell LMA, persons with the title machinist who work in large firms, frequently performed the duties of machine operator. While there may be an overstatement of the machinist vacancy rate, regardless of duties, most employers require a good vocational education, work experience, or both for their machinist openings.

Additional evidence that the machining occupations are fruitful ground for vocational training is reflected in both the high vacancy rate of 6.4 percent for skilled tool and die makers as well as the large number of openings for machine operator's jobs, which topped the list of 40 occupational categories in total number of openings despite having a low vacancy rate.

Other Production Workers

Welders, cutters, and assemblers have a fairly high vacancy rate (4.1) among the production occupations. As with machinists there is a high replacement demand for welders. The 4.2 percent vacancy rate for assemblers is linked to the growth of high technology firms and the need to assemble components.

Mechanics and Repairers

The vacancy rate of 4.3 percent indicates a fair demand for mechanics and repairers. This group does not include auto mechanics and telephone repairers.

Service Occupations

Service occupations involved with the preparation and serving of food had the highest vacancy rates with cook and waiter/waitress having rates of 5.4 and 3.8 percent respectively. These occupations are expected to be in demand through the 1980's. However some jobs in this area are considered to be in the "secondary labor market" due to their low pay, lack of career advancement and high turnover. In addition, the JOS survey indicated that 80 percent of these openings were part time.

V. Supply

This report frequently employs the expression "vocational-technical" in reference to jobs and training. It will concentrate on those jobs that are appropriate for graduates of vocational-technical schools, high schools, special post high school training programs, and community colleges. The educational qualifications range from high school diplomas and certificates to associates degrees, for which no more than two years of post secondary school training is required. Professional jobs requiring four years of college or more are not included under the heading of vocational technical jobs. Similarly, unskilled jobs are not included, since "vocational-technical" implies some degree of skill and training.

Information on Area Training Centers

The Lowell labor area contains a number of schools that train their students for entry into vocational technical jobs. The majority of vocational-technical education, however, is conducted by six training centers: Greater Lowell Vocational-Technical School, Shawsheen Valley Vocational-Technical School, Nashoba Valley Technical School, Northern Essex Community College, Middlesex Community College and the CETA Training Program.

Greater Lowell Vocational Technical High School which serves the communities of Lowell, Dracut, Tyngsboro, and Dunstable has an enrollment of about 2,500 students from grades nine through twelve. Enrollment in the freshman class is apportioned to each city and town on the basis of population. In the city of Lowell where there were 900 applicants for 600 slots last year, a lottery system was used to determine admissions.

Greater Lowell Vocational Tech currently offers courses in twenty-seven areas:

Auto Body Repair	Culinary Arts	Home Economics
Auto Mechanics	Data Processing	Health Assistant
Child Care	Drafting	Printing
Cosmetology	Electricity	Radio & TV Repair
Commercial Art	Electronics	TV Production
		Small Engines

Business Technology
- Typing
- Shorthand
- Word Processing

Construction Cluster
- Plumbing
- Painting and Decorating
- Upholstery
- Carpentry
- Heating, Ventilation and Air Conditioning (HVAC)
- Mason Trades

Manufacturing Cluster
- Sheet Metal
- Welding
- Machine Shop

Greater Lowell Vocational Tech participates in a cooperative education program. Seniors may elect to work in industry on alternate weeks. Generally, there are two persons per co-op slot preventing a break in continuity for the employer. The pay for co-op jobs ranges from the minimum wage to five or six dollars an hour.

Approximately 98 percent of last year's graduating class were either placed in jobs or went on to post secondary education or military service. Approximately 75 percent of the placements were in the specific areas for which students were trained.

Trade areas experiencing the greatest demand were electronics, drafting (both mechanical and electrical), business technology, and food technology. Among the more difficult to place were commercial art and HVAC (Heating, Ventilation, and Air Conditioning) graduates.

Greater Lowell Vocational Tech has a post high school LPN program as well as an after school CETA program which is training 150 high school graduates to become electronic technicians.

Nashoba Valley Technical School located in Westford, serves the communities of Westford, Chelmsford, Littleton, Groton, Pepperell, Townsend

and Shirley. There are 741 students enrolled in grades 9 through 12. At this time, there are no selection criteria or size limits for incoming classes.

Nashoba Valley Tec currently offers these vocational-technical courses

Auto Body	Printing
Auto & Diesel Mechanics	Horticulture/Landscape
Culinary & Baking	Machine Technology
Data Processing	Metal Fabrication & Welding
Drafting	Mill & House Carpentry
Electrical	Painting & Decorating
Electronics	Plumbing & Heating
	HVAC

All courses are offered during the normal school day. A co-op program provides students with a good sense of the responsibilities and obligations required of an employee in a vocational-technical job, while allowing them to earn salaries that range from the minimum wage to six dollars per hour. Students in the program alternate between one week of work and one week of school. Seniors working in their trade areas are eligible for early release for full time jobs.

The demand for graduates seems equal for almost all programs - with electronics slightly higher. Last year 98.5 percent of the graduates were either placed in jobs or went on to post secondary education or military service. Approximately 90 percent of the graduates were placed in the specific areas for which they were trained

The Shawsheen Valley Vocational-Technical School which serves the communities of Billerica, Tewksbury, Bedford, Burlington and Wilmington has an enrollment of 1,600 in grades nine through twelve. It will expand to 1,800 next year. This year there were two applicants for every available slot. Admission was based on grade school records, tests and teacher recommendations.

Shawsheen Valley Vocational Tech offers courses in the following areas:

Machine Shop	Electronics	Drafting
Metal Fabrications	Plumbing	Chemical Technician
Auto Body	HVAC	Business Technology
Auto Mechanics	Cosmetology	. Legal Secretarial
Diesel Mechanics	Culinary	. Medical Secretarial
Plant Maintenance	Data Processing	. Executive Secretarial
Masonry	Graphics Communication (Printing)	. Word Processing
Carpentry	Health Services	Technical & Industrial Illustration

A co-op program enables students to gain experience while working in industry on alternate weeks at salaries that range from the minimum wage to six dollars an hour. While there is a fairly high demand for most of the graduates, those training for careers in the repair and servicing of electro-mechanical equipment of the high tech industries are in the greatest demand. The breakdown of the 353 graduates in 1980 was as follows: 78 percent employed in their field, 6 percent post secondary education, 4 percent military service, 5 percent employed in other fields, and 4 percent waiting to be hired. The retention rate for the co-op, hired full time after graduation, was 98 percent.

Northern Essex Community College, 100 Elliott Street, Haverhill, Massachusetts 01830. In addition to its traditional associate degree transfer programs, Northern Essex Community College offers a wide variety of programs to those students who intend to start working after earning an associate degree or a certificate.

Nontraditional educational programs at NECC include CETA-funded job training; the Discovery Program for educationally disadvantaged students; GED preparation; English as a second language; and high technology course packages individualized to meet the training needs of particular industries.

NECC also offers a comprehensive program of continuing education and the only accredited evening nursing program in New England.

The student body at Northern Essex Community College (NECC) includes 2,600 full time students and 4,600 part time evening students

Programs

Associate Degree Career Programs

Business

- Accounting
- Administrative Assistant
- Administrative Assistant: Education option
- Banking
- Business Management
- Business Management: Data Processing
- Business Management: Retail
- Executive Secretary

Health

- Medical Record Technology
- Mental Health Technology
- Nursing (Day and Evening)
- Radiologic Technology
- Respiratory Therapy Technology

Service

- Criminal Justice
- Deafness Communication
- Early Childhood Education
- Educational Assistant
- Fire Protection and Safety Technology
- Food Service Management
- Gerontology
- Language Communication Assistant
- Library Associate

Technology

- Civil Technology
- Computer Technology
- Electronic Technology

Certificate Programs

- Deafness Communication
- Gerontology
- House Manager
- Language Communication Aide
- Library Assistant
- Respiratory Therapy

Middlesex Community College, Spring Road, Bedford 01730. Middlesex Community College, established in 1970, serves the cities and towns in the northwest suburban region outside Boston. Middlesex Community College is particularly known for its range of allied health programs as well as career programs in business, secretarial studies, human services, and technology.

More than 5,000 people take advantage of the programs offered by the Division of Continuing Education and Community Services at its ten extension centers throughout the region. The day college which now enrolls 1,400 students, will have the potential to expand to 3,000 full time day students when its permanent site is enlarged.

Programs

Associate Degree Career Programs

- Business/Secretarial
  - Business Administration
    - Accounting
    - Fashion
    - Merchandising
    - General Business
    - Management
    - Marketing
    - Retail Management Operations
  - Computer Operations
  - Secretarial
    - Executive
    - General
    - Legal
    - Medical, and
    - Word Processing Options

- Health
  - Dental Hygiene
  - Dental Laboratory Technology
  - Diagnostic Medical Sonography
  - Medical Assistant
  - Medical Laboratory Technician
  - Nursing
  - Radiologic Technology

- Service
  - Law Enforcement
  - Mental Health Associate
  - Fire Science
  - Security Administration
  - Social Work Associate

- Technology
  - Computer Electronic Technology
  - Electro-Mechanical Drafting
  - Liberal Studies - Automotive Option

Certificate Programs

* Administrative Assistant
* Computer Electronic Technician
  Dental Assisting
* Early Childhood Education
  Electro-Mechanical Drafting Assistant
* Gerontology
* Legal Assistant
* Social Work Associate
* Word Processing

* Offered Through the Division of Continuing Education

CETA classroom training in Lowell represents the sixth major training program to serve the Lowell Labor Market Area. It currently offers vocational technical programs to those who are CETA eligible, a population generally considered to be economically disadvantaged. Trainees receive a stipend for the training time that they put in, which is a maximum of 25 hours per week. Titles II B and C of CETA provide classroom training, on the job (OJT) training, and educational services to economically disadvantaged individuals.

Estimating Supply

Estimating the magnitude of supply in the area of vocational technical jobs presents some difficulties, not the least of which is the choice of an appropriate geographical base. However, the main problems are in the areas of classification and cross referencing, as well as, the need for supplementary information on labor market linkages, since relating a vocational program to an occupational category does not necessarily imply the program is the best or even the usual method of acquiring the particular skills.

The existence of several different classification systems is the main obstacle to matching information on supply and demand. The problem arises more from fragmentation than complexity. At this time there are five major classification systems. Those used by the State Employment Security Agencies are the Dictionary of Occupational Titles (DOT) for job classification and the Standard Industrial Classification (SIC) for industry classifications. These are employed in Tables 1 and 4 in the sections on the demand for labor.

The United States Bureau of the Census system and the United States Office of Education Vocational System are used in Tables 5 and 6 in the appendix of this report. These Office of Education codes are distinct from all other schemes, and although efforts at cross referencing have been made, the fit between these codes and the Census/BLS matrix categories and the DOT is extremely limited. Fortunately, for users of the data in this report, the various classification systems are not sending out contradictory signals as to which areas are fruitful for vocational-technical training.

VI. Summary

The tremendous growth of the high technology industry both within the central city of Lowell and throughout the entire labor area and into the adjacent Boston and Lawrence labor areas, has created an exceptional demand for all types of skilled manpower in the Merrimac Valley. The industry is siphoning off available pools of labor so effectively that it may become increasingly difficult to find a sufficient labor supply to meet its needs and those of other industries in the labor area.

Local industry is searching for secretaries, mechanics, welders, electronics technicians, and others in the skilled trades. Demand is so great that even a moderate recession is unlikely to substantially diminish the need because firms will increasingly find it necessary to stockpile skilled labor to insure its availability when economic conditions improve. Because the high technology sector does not generally mass produce goods to be sold to consumers, it is not likely to be any more adversely affected by an economic downturn than it was during the last recession when it remained quite healthy. Furthermore, the prospects for the continued growth of the high technology industry in the Lowell area appear to be excellent, and those, who acquire skills now in short supply in the labor market, should not be significantly impacted by layoffs during their careers.

In coping with labor shortages for skilled tradesmen, clerical workers, and technicians, local vocational technical schools are doing all that can be asked of them; their extremely high placement rates for their graduates attests to this. Course selection is influenced by input from the business community with whom they have strong ties, cemented by the continuing success of the co-op programs. However, some of the regional vocational-technical schools are somewhat limited by their enrollment capacity.

Beyond increasing the capacity of regional-vocational technical schools, additional supplies of labor could come from a number of sources; retraining, re-entry, flextime, partnering, "mother's hours" and post retirement careers.

While there are some shortages of specific skills in the Lowell LMA, the quality of vocational-technical education in the Lowell area is a very positive consideration for industries considering expansion or relocation. Its greatest assets are the diversity of skills of its labor force as well as the solid underpinning in the basics (arithmetic, reading, writing). At present the Bay State Skills Project, a broad coalition of government, education, business and labor, is assisting in providing skills training and education to prepare workers needed by growth industries as well as coordinating job demand and educational supply. This is an area where substantial returns can be realized.

A P P E N D I X

Job Requirements and Training For Selected Vocational-Technical Occupations

Auto Body Repairers
Auto Mechnics
Carpenters
Electricians
Machinists
Welders
Computer Technicians
Air Conditioning & Refrigeration, and Heating Mechanics
Cooks and Chefs
Commercial Artists
Drafters
Dental Laboratory Technicians
Dental Assistants
Practical Nurses
Secretaries/Stenographers

A. Mechanics and Repairers

1. Automobile Body Repairers: most automobile body repairers learn the trade on the job. They generally start as helpers and pick up skills from experienced workers. Usually, three to four years of on-the-job training are needed to become skilled in all aspects of body repair. Most training authorities recommend a three or four-year formal apprenticeship program as the best way to learn the trade, but few of these programs are available. The apprenticeship includes both on-the-job and classroom instruction. Courses in automobile body repair by high schools, vocational schools, and private trade schools provide helpful experience, as do courses in auto mechanics. Although completion of high schools is generally not a requirement. Many employers believe graduation indicates that a person at least has some of the qualities of a good worker. Automobile body repairers must buy hand tools, while employers usually furnish power tools. The usual pattern is for trainees to accumulate tools as they gain experience.

Source: Occupational Handbook, 1978-1979 Edition.
U. S. Department of Labor, Bureau of Labor Statistics
Bulletin 1955.

2. Automobile Mechanics: Most automobile mechanics learn the trade on the job. Although a beginner can make simple repairs after a few months' experience, it usually takes three to four years to become familiar with all types of repairs. In contrast, radiator mechanics, glass mechanics, and brake specialists, who do not need an all-around knowledge of automobile repairs,may learn their job in two years.

   Most training authorities recommend a three-or four year formal apprenticeship program, which includes both on-the-job training and classroom instruction.

   More typically, however, employers look for young persons with mechanical aptitude and knowledge of automobiles. Working on cars as a hobby is a valuable experience. Completion of high school is an advantage in obtaining an entry job because to most employers it indicates that a young person has at least some traits of a good worker. Courses in automobile repair offered by high schools and trade schools are also helpful.

   The usual practice is for mechanics to buy their hand tools, and then accumulate tools as they gain experience. Many experienced mechanics have over several hundred dollars invested in tools.

   Employers sometimes send experienced mechanics to factory training centers to learn to repair new models or to receive special training in subjects such as automatic transmission or air-conditioning repair.

3. Computer Service Technicians: Most employers require applicants for technician trainee jobs to have one to two year's post high school training in basic electronics or electrical engineering. This training may be acquired from public vocational school, a college or junior college. Basic electronics training offered by the Armed Forces is excellent preparation for technician trainees.

   A high school student interested in becoming a computer service technician should take courses in math and physics; high school courses in electronics, electricity, and computer programming are also helpful.

   Technician trainees usually attend company training centers for three to six months to learn elementary computer theory, computer math, circuitry theory, and to further their knowledge of electronics.

In addition to formal instruction, trainees must complete six months to two year's of on-the-job training.

Because manufacturers continually redesign equipment and develop new uses for computers, experienced technicians must frequently attend training sessions to keep up with these changes. Furthermore, most computer equipment operates on the same basic principles, but machines built by different companies may be unique in design and construction. For this reason, technicians may find it difficult to transfer between companies that maintain different brands of equipment.

4. Maintenance Electricians: Most maintenance electricians learn their trade on the job or through formal apprenticeship programs. Training authorities agree that apprenticeship gives trainees a more thorough knowledge of the trade and improved job opportunities during their working life. The apprenticeship usually lasts four years, and consists of on-the-job training and related classroom instruction in math, electrical and electronic theory, and blueprint reading. Training typically includes motor repair, wire splicing installation and repair of electronic controls and circuits and welding and brazing.

   Although apprenticeship is the preferred method of training, many people learn the job informally on the job, by serving as helpers to skilled maintenance electricians.

   Persons interested in becoming maintenance electricians can obtain a good background by taking high school or vocational school courses in electricity, electronics, algebra, mechanical drawing, shop, and science. To qualify for an apprenticeship program, an applicant must be 18 years old and usually must be a high school or vocational school graduate with one year of algebra.

5. Air Conditioning, Refrigeration, and Heating Mechanics: Most of these mechanics start as helpers and acquire skills by working for several years with experienced mechanics. All new workers in these trades receive similar on-the-job training lasting four to five years. They begin by doing simple tasks such as carrying materials and cleaning. Within a year they learn to cut, braze, and solder pipe and tubing; within three,to install fittings and work with sheet metal. By the end of the period, they are capable of checking circuits and installing burners and pumps.

3. Welders: Generally, it takes several years of training to become a skilled welder. Some of the less skilled jobs, however, can be learned on the job in a few weeks or months.

   Many large companies conduct programs to train people as welders. After completing the course, individuals are offered a job. A few companies offer employees welder apprenticeship programs.

   Persons planning careers as welders need manual dexterity, good eyesight, and good hand-eye coordination. They should also be able to concentrate on detailed work for long periods.

   Most employers prefer applicants who have high school or vocational school training in welding. Courses in shop mathmetics, mechanical training, blueprint reading, physics, and chemistry are also helpful.

4. Drafters: Persons interested in becoming drafters can acquire the necessary training in technical institutes , junior and community colleges, extension divisions of universities, and vocational and technical high schools. Others qualify through on-the-job training or three to four-year apprenticeship programs.

   Training for a career in drafting, whether in high school or post high school program, should include courses in math, physical sciences, mechanical drawing, and drafting. Shop practices and skills are also helpful since many higher level drafting jobs require knowledge of manufacturing or construction methods.

   Those planning careers in drafting should be able to do freehand drawing of three-dimensional objects and detailed work requiring a high degree of accuracy.

5. Commercial Artists: Artistic ability, imagination and a capacity to visualize ideas on paper are important qualifications for success in commercial art.

   Persons can prepare for a career in commercial art by attending a two-or four-year trade school, a junior college, college or university which offers a program in commercial art.

   Most artists who enter the field are graduates of trade schools. Admission to these schools is based on high school grades, a portfolio of art work and an interview. A growing number of colleges and universities, however, confer degrees in commercial art.

When hiring helpers or apprentices, employers prefer high school graduates with mechanical aptitude who have taken courses in math, blueprint reading, physics, electronics, and basic construction and engineering concepts.

B. Industrial Production and Related Occupations

1. Carpenters: Although training authorities recommend the completion of an apprenticeship program as the best way to learn carpentry, a large number of workers in the trade acquire their skills informally. The apprenticeship program usually consists of four years of on-the-job training, in addition to a minimum of 144 hours of related classroom instruction each year. Apprentices receive classroom instruction in drafting and blueprint reading, mathematics for layout work, and the use of woodworking machines. Often other informal on-the-job programs are provided by local contractors and are normally shorter and less thorough than apprenticeships.

   Persons interested in carpentry should take the all-around training given in apprenticeship programs. A high school or vocational school education is desirable, as are courses in carpentry shop, mechanical drawing, and general math. Applicants should also have manual dexterity, and the ability to solve arithmetic problems quickly and accurately.

2. All-Around Machinists: A four-year formal apprenticeship program is the best way to learn the machinist trade, although many machinists learn their trade informally on the job.

   Persons interested in becoming machinists should be mechanically inclined and tempermentally suited to do highly accurate work that requires concentration as well as physical effort.

   A high school or vocational school education stressing math, physics, and machine shop training is desirable. Some companies require experienced machinists to take additional courses in math and electronics at the company's expense so that they can service and operate numerically controlled machine tools.

   Typical machinist apprenticeship programs consist of approximately 8,000 hours of shop training and about 550 hours of related classroom instruction.

Limited training in commercial art may be obtained through public vocational high schools and practical experience on the job. There is no formal training program for the commercial art trainee, however.

C. Services

Cooks and Chefs: Most cooks start work in unskilled positions such as kitchen help and acquire their skills on the job. However, an increasing number of cooks are acquiring high school and post high school vocational training in food preparation. Occasionally they are trained in apprenticeship programs offered by professional associations and trade unions.

A high school diploma is not required for most beginning jobs, it is recommended, however, for those planning careers as cooks or chefs. High school or vocational school courses in business arithmetic and business administration are helpful in becoming a cook or chef.

Persons who have had courses in commercial food preparation will have an advantage when looking for jobs in large restaurants or hotels where hiring standards are often high. Some vocational programs in high schools offer this kind of training. More often, though, these courses, ranging from two months to two years or more, and open in some cases only to high school graduates, are given by trade schools, vocational centers, junior colleges, universities, professional associations, and trade unions.

D. Office Occupations

Secretaries and Stenographers: Generally, graduation from high school is required for a job as a secretary or stenographer. Many employers prefer applicants who have additional secretarial training at a college or private business school. Courses vary from a few months instruction in basic shorthand and typing to longer programs teaching specialized skills such as shorthand reporting or legal or medical secretarial work.

An increasing number of private firms and governmental agencies have their own training facilities where employees can upgrade their skills.

Employers usually have no preference among the many different shorthand methods. They are more interested in accuracy and speed. Secretaries and stenographers should also have a solid knowledge of spelling, punctuation, and English usuage.

E. Health Occupations:

1. Dental-Laboratory Technicians: Although no minimum formal education is needed to enter this occupation, a high school diploma is an asset. Among the personal qualifications that employers look for are a high degree of manual dexterity, patience and a liking for detailed work. High school students interested in a career as a dental technician are advised to take courses in arts, crafts, metal shop, metallurgy, and sciences.

   Many dental laboratory technicians learn their craft on the job, although more andmore are taking formal training programs before starting work on-the-job training training which usually lasts four to five years.

   Dental laboratory technicians may become Certified Dental Technicians by passing written and practical examinations given by the National Board for Certification. This certification is becoming increasingly important as evidence of a technicians competence.

2. Dental Assistants : Most dental assistants learn their skills on on the job. An increasing number, however, are trained in formal post high school programs. Most post high school courses are offered by community colleges or vocational schools. More than three-fourths of these programs take one year to complete and lead to a certificate or diploma. Graduates of two-year programs offered in community colleges earn an associate degree.

Approved dental assistant programs include classroom and laboratory instruction in skills and related theory. Trainees get practical experience in affiliated dental schools, local clinics, or selected dental offices.

High school students interested in careers as dental assistants should take courses in biology, chemistry, health, typing, and office practices.

Graduates of accredited dental assistant programs, who successfully complete an examination administered by the Certifying Board of the American Dental Assistants Association become Certified Dental Assistants. This certification is acknowledgement of an assistant's qualifications but is not generally required for employment.

2. Licensed Practical Nurses:

All states regulate the preparation and licensing of practical nurses. To become licensed applicants must complete a course of instruction in practical nursing that has been approved by the State board of Nursing and pass a written examination. Some schools do not require completion of high school but they give preference to graduates. Volunteer hospital work can provide a useful background for practical nursing, but most applicants have no prior work experience.

Practical Nurse Training programs are usually one year long and include both classroom study and clinical practice.

Those who wish to become licensed practical nurses should have a concern for human welfare. They must be emotionally stable because working with sick and injured people can be upsetting. Good health is important, as is physical stamina because one must work while standing a great deal of the time.

TABLE 5

LOWELL LABOR MARKET AREA

A SUMMARY OF VOCATIONAL PROGRAMS ELIGIBLE FOR FEDERAL FUNDING ON THE BASIS OF LOCAL LABOR MARKET INFORMATION

04.0900	Hardware, Building Material
04.2000	Retail Trade, Other
14.0100	Accounting and Computing Occupations
14.0300	Filing, Office Machines Clerical Occupations
14.0303	General Office Clerks
14.0400	Information Communication Occupations
14.0600	Personnel Training and Related Occupations
14.0700	Steno, Secretarial and Related Occupations
14.0702	Secretaries
14.0900	Typists and Related
14.0902	Typists
16.0107	Electrical Technology
16.0108	Electronic Technology
16.0111	Industrial Technology
17.0600	Business Machine Maintenance
17.1007	Plumbing and Pipefitting
17.1099	Other Construction and Maintenance
17.1200	Diesel Mechanic
17.1300	Drafting Occupations
17.1400	Electrical Occupations
17.1500	Electronics Occupations
17.1501	Communications
17.1600	Fabric Maintenance Services
17.1900	Graphic Arts Occupations
17.2100	Instrument Maintenance and Repair Occupations
17.2102	Watchmaking and Repairs
17.2302	Machine Shop
17.2303	Machine Tool Operation
17.2305	Sheet Metal
17.2399	Other Metalworking Occupations
17.2400	Metallurgy
17.3100	Small Engine Repair
17.3300	Textile Production and Fabrication

TABLE 6

LOWELL LABOR MARKET AREA

VOCATIONAL PROGRAMS LEADING TO HIGH GROWTH OCCUPATIONS

acturing achine ations	Assembler	Checkers, Examiners & Inspectors	Electronic Technicians	Misc. Machine Operatives	Misc. Operatives	Office Machine Repairers	Drafters
07			X				X
08			X				
11	X	X					
00							
07					X		
99	X			X	X		
00							X
00	X	X					
00	X	X	X				
01	X		X				
00					X		
.00	X	X		X	X		
.02	X	X			X		
02	X			X	X		
03		X		X			
05				X			
99		X		X	X		
00		X		X			
.00		X					
00		X			X		
00		X					
00		X					

cal ations	Bookkeepers	General Secretaries	Typists	Miscellaneous Clerical Workers
.00	X			X
00	X		X	X
.03	X			X
00				X
00				X
00		X		
02		X		
00			X	
02			X	

workers and sales clerks - 04.0900, 04.2000

Syllabus of Studies in the Vocational Education Field

1. "A Description of the Methodologies Used in Developing a Labor Market Information Package for the Division of Occupational Education" - a Research Paper prepared by Christine Le Cam, Robert Vinson, and Pamela Frugoli of the Research and Program Development Division of the State Department of Manpower Development. January 1979

2. "A Description of the Methodologies of Data Sources Used in Constructing the Preliminary Occupational Demand-Supply Table for the State of Massachusetts" - a Research Paper prepared by Christine Le Cam and Andrew Sum of the Research and Program Development Unit of the State Department of Manpower Development. February 1978

3. "Employment Requirements for Massachusetts by Industry 1970-1985," 1976 by O.E.S. Unit of the Occupation/Industry Research Department D.E.S.

Similar studies are also available for the ten large LMA's.

4. "Dictionary of Occupational Titles" - 4th edition 1977, U. S. Department of Labor, ETA, U. S. Employment Service

5. "Characteristics of Applicants Registered in Employment Service Offices and Selected Employment Service Activities Massachusetts," cumulative October 1978 through June 1979. Issued by Labor Area Research Department of DES.

6. "Issues in the Development of a Comprehensive Occupational Information System for Planning Employment and Training Programs at the State and Local Level: Current Research Efforts within the State of Massachusetts" by Andrew Sum, P. K. Sawhney, and Irwin Herrnstadt, a report prepared for the Fifth Annual New England Business and Economic Development Conference, Wakefield. 1977

7. "Occupational Outlook Handbook, 1978-1979 Edition, Bulletin 1955, U. S. Department of Labor, BLS.

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9. "An Inventory of the Labor Market Supply Generated by Secondary and Post-Secondary NonProfessional Education Institutions", by Lowell University's Department of Economics.

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11. "Matching Occupational Supply and Demand Data With State and Labor Markets: Alternative Methods for Allocating Vocational Education Program Graduates Among Their Related Census Occupations" - by Christine Cormier, Andrew Sum and P. K. Sawhney. A report prepared for the Mass. DES.

12. Occupational Code Conversions, 3 Volumes, by California Employment Development Department.

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15. "Standard Terminology for Curriculum and Instruction in Local and State School Systems", U. S. Office of Education, State Educational Records and Report Series, 1970.

16. "Matching Occupational Classifications to Vocational Education Program Codes", U. S. Department of Labor, BLS, Revised, 1975.

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18. "Vocational Education and Occupations", U. S. Department H. E. W. and U. S. Department of Labor, Washington, 1969.

19. "Suffix Codes for Jobs Defined in the Dictionary of Occupational Titles", 3rd Edition, U. S. Department of Labor

20. Alphabetical Index of Occupations and Industries, U. S. Bureau of the Census, Washington, 1971.

21. "Manpower Data Packages for Planning Employment and Training Programs Based Upon the 1976 Survey of Income and Education" for the State Department of Manpower Development, June 1978.

22. Same study as in 21, and for the Springfield SMSA.

23. "A Descriptive Analysis of the Methodology Used to Estimate Institutional Supply by Occupation Originating From Vocational Education ", April 1978, Pamela Frugoli, David Lockhart and Christine LeCam, DMD.

24. "The Role of Unemployment - Insurance Based Data Source in Planning Employment and Training Programs at the Local Level," July 1978, Russell Ganz and Andrew Sum, DMD.

25. "Issues in the Development of a Comprehensive Occupational Information System for Planning Employment and Training Programs at the State and Local Level: Current Research Efforts Within the State o Massachusetts", - Research and Program Development, Department of Manpower Development and the Department of Economics, Northeastern University, October 1977.

26. "Employment Requirements by Occupation, by Industry, 1976-1985, by Job Market Research, Mass. DES, December 1979.

27. "Occupational Profile of Selected Nonmanufacturing Industries in Massachusetts, 1978, published 1980.

28. Vocational Education Planning and Workforce Information Report for Boston SMSA, published 1980.

29. Similar Report for Brockton SMSA.

30. Similar Report for Fall River LMA.

31. Similar Report for Fitchburg-Leominster SMSA.

32. Similar Report for Lawrence-Haverhill SMSA.

33. Similar Report for Lowell LMA.

34. Similar Report for New Bedford LMA.

35. Similar Report for Pittsfield LMA.

36. Similar Report for Springfield-Chicopee-Holyoke LMA.

37. Similar Report for Worcester LMA.

38. "The Variety and Distribution of Occupations in Massachusetts An Occupational Profile of the Employed Worker", on a 1976 base, by Mass. Div. of Employment Security, Occ/Ind. Res. Department, March 1980.

39. "Labor Market Information Package Prepared for the Barnstable Labor Market Area, Mass. Department of Manpower Development, Division of Policy and Evaluation, January 1980.

40. Similar study for the Boston Labor Market Area, January 1980.

41. Brockton Labor Market Area, January 1980.

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43. Fitchburg Labor Market Area, January 1980.

44. Greenfield/Athol Labor Market Area January 1980.

45. Lawrence Labor Market Area, January 1980.

46. Lowell Labor Market Area, January 1980.

47. New Bedford Labor Market Area, January 1980.

48. Pittsfield Labor Market Area, January 1980.

49. Springfield Labor Market Area, January 1980.

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55. U. S. Department of Labor, Manpower Administration, Dictionary of Occupational Titles, Volumes I and II, U. S. Government Printing Office, Washington D.C. 1965.

56. U. S. Department of Labor, Manpower Administration, Suffix Codes for Jobs Defined in the Dictionary of Occupational Titles, Third Edition, U. S. Government Printing Office, Washington, D. C. 1967.

Other information and reports available from the following sources:

57. Educational Resources Information Center (ERIC)
National Institute of Education
1200 19th Street N.W.
Washington, D.C. 20208

58. National Center for Research in Vocational Education
Ohio State University
1960 Kenny Road
Columbus, Ohio 43210

This center contains an extensive Research Library and also the ERIC (see item 55 above) Clearinghouse on Adult, Career, and Vocational Education.

59. National Center for Education Statistics
400 Maryland Avenue S.W.
Washington, D.C. 20202

TABLE 1--ES JOB BANK OPENINGS IN REPORTING DISTRICTS
BY OCCUPATIONAL CATEGORY
LOWELL MASSACHUSETTS
MARCH 1981

OCCUPATIONAL CATEGORY	OPENINGS AVAILABLE				OPENINGS UNFILLED AT MONTH END			
	NUMBER		AVERAGE PAY		TOTAL		UNFILLED 30 DAYS OR MORE	
	CURRENT	LAST MONTH	CURRENT	LAST MONTH	CURRENT	LAST MONTH	CURRENT	LAST MONTH
TOTAL, ALL OCCUPATIONS	290	238	$ 10,068/YR	$ 9,071/YR	235	94	52	53
PROFESSIONAL, TECHNICAL, AND MANAGERIAL	38	24	18,307/YR	12,384/YR	38	14	1	14
CLERICAL AND SALES	53	65	8,433/YR	8,348/YR	47	26	10	13
SERVICE	60	43	3.55/HR	3.52/HR	40	14	14	9
FARMING, FISHERY, FORESTRY, AND RELATED	INA	1	INA	4.40/HR	INA	INA	INA	INA
PROCESSING	1	3	5.00/HR	3.65/HR	1	INA	INA	INA
MACHINE TRADES	24	26	5.34/HR	4.99/HR	22	8	5	3
BENCH WORK	47	20	3.99/HR	4.55/HR	37	12	7	6
STRUCTURAL WORK	34	23	5.60/HR	5.11/HR	29	16	12	7
MISCELLANEOUS	33	33	4.19/HR	3.84/HR	21	4	3	1

TABLE 2--TOTAL ES JOB BANK OPENINGS AND AVERAGE PAY
BY OCCUPATIONAL CATEGORY, DIVISION AND JOB TITLE
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE TOTAL	OPENINGS AVAILABLE AVERAGE PAY	OPENINGS UNFILLED TOTAL	OPENINGS UNFILLED AVERAGE PAY	OPENINGS UNFILLED 30 DAYS TOTAL	OPENINGS UNFILLED 30 DAYS AVERAGE PAY
TOTAL, ALL OCCUPATIONS	290	$ 10,068	235	$ 10,471	52	$ 9,209
0 & 1 PROFESSIONAL, TECHNICAL, AND MANAGERIAL	38	18,307	38	18,307	1	11,440
003 ELECTRICAL AND ELECTRONICS ENGINEERING	19	16,573	19	16,573	0	0
007 MECHANICAL ENGINEERING	3	17,333	3	17,333	0	0
01 ARCHITECTURE AND ENGINEERING	3	28,333	3	28,333	0	0
012 INDUSTRIAL ENGINEERING	2	27,500	2	27,500	0	0
019 ARCHITECTURE AND ENGINEERING, N.E.C.	1	30,000	1	30,000	0	0
02 MATHEMATICS AND PHYSICAL SCIENCES	7	23,563	7	23,563	0	0
020 MATHEMATICS	4	27,750	4	27,750	0	0
022 CHEMISTRY	2	20,000	2	20,000	0	0
029 MATHEMATICS & PHYSICAL SCIENCES, N.E.C.	1	10,375	1	10,375	0	0
04 LIFE SCIENCES	1	9,000	1	9,000	0	0
045 PSYCHOLOGY	1	9,000	1	9,000	0	0
07 MEDICINE AND HEALTH	3	12,827	3	12,827	1	11,440
078 MEDICAL AND DENTAL TECHNOLOGY	2	14,040	2	14,040	1	11,440
079 MEDICINE AND HEALTH, N.E.C	1	10,400	1	10,400	0	0
13 WRITING	1	0	1	0	0	0
131 WRITERS	1	0	1	0	0	0
18 MANAGERS AND OFFICIALS, N.E.C.	1	0	1	0	0	0
186 FINANCE, INS., AND REAL ESTATE MANAG.	1	0	1	0	0	0
2 CLERICAL AND SALES	53	8,433	47	8,461	10	9,436
20 STENOGRAPHY, TYPING, FILING, AND RELATED	27	8,975	25	8,998	7	8,947

TABLE 2--TOTAL ES JOB BANK OPENINGS AND AVERAGE PAY
BY OCCUPATIONAL CATEGORY, DIVISION AND JOB TITLE
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE TOTAL	OPENINGS AVAILABLE AVERAGE PAY	OPENINGS UNFILLED TOTAL	OPENINGS UNFILLED AVERAGE PAY	OPENINGS UNFILLED 30 DAYS TOTAL	OPENINGS UNFILLED 30 DAYS AVERAGE PAY
201 SECRETARIES	8	$ 9,553	8	$ 9,553	1	$ 7,280
203 TYPISTS & TYPEWRITIN G MACHINE OPERATORS	6	8,822	6	8,822	2	10,000
209 STENOGRAPHY,TYPING FILING & REL WRK NEC	13	8,737	11	8,736	4	9,100
21 COMPUTING AND ACCOUNT-RECORDING	4	8,294	3	8,736	2	9,620
211 CASHIERS AND TELLERS	2	6,968	1	6,968	0	0
213 ELCTRNC/ELECTROMECHA NICAL DATA PROCESSOR	1	10,400	1	10,400	1	10,400
214 BILLING AND RATE CLERKS	1	8,840	1	8,840	1	8,840
22 PRODUCTION AND STOCK CLERKS	8	8,832	5	9,139	1	12,000
221 PRODUCTION CLERKS	2	11,200	2	11,200	1	12,000
222 SHIPPING, RECEIVING, AND STOCK CLERKS	6	8,043	3	7,765	0	0
24 MISCELLANEOUS CLERICAL	3	7,973	3	7,973	0	0
249 MISCELLANEOUS CLERIC AL WORK, N.E.C.	3	7,973	3	7,973	0	0
26 SALESPERSON, CONSUM- ABLE COMMODITIES	5	6,968	5	6,968	0	0
261 SALESWORK,TEXTILE PR OD,APPAREL & NOTIONS	5	6,968	5	6,968	0	0
27 SALESPERSONS, COMMODITIES, N.E.C.	5	7,072	5	7,072	0	0
279 SALES OCCS., MISC. COMMODITIES, N.E.C.	5	7,072	5	7,072	0	0
29 MISCELLANEOUS SALES OCCUPATIONS	1	9,360	1	9,360	0	0
290 SALES CLERKS	1	9,360	1	9,360	0	0
3 SERVICE	60	3.55	40	3.61	14	3.45
31 FOOD & BEVERAGE PREP ARATION & SVC. OCCS.	8	3.84	7	3.91	3	3.83
313 CHEFS AND COOKS, HOTELS & RESTAURANTS	2	4.38	2	4.38	0	0

TABLE 2--TOTAL ES JOB BANK OPENINGS AND AVERAGE PAY
BY OCCUPATIONAL CATEGORY, DIVISION AND JOB TITLE
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE TOTAL	OPENINGS AVAILABLE AVERAGE PAY	OPENINGS UNFILLED TOTAL	OPENINGS UNFILLED AVERAGE PAY	OPENINGS UNFILLED 30 DAYS TOTAL	OPENINGS UNFILLED 30 DAYS AVERAGE PAY
315 MISCELLANEOUS COOKS, EXCEPT DOMESTIC	1	$ 4.60	1	$ 4.60	1	$ 4.60
318 KITCHEN WORKERS, N.E.C.	4	3.40	3	3.42	2	3.45
319 FOOD/BEVERAGE PREPARATION & SVC., N.E.C.	1	3.75	1	3.75	0	0
32 LODGING AND RELATED SERVICE OCCUPATIONS	1	3.75	1	3.75	0	0
321 HOUSEKEEPERS,HOTELS AND INSTITUTIONS	1	3.75	1	3.75	0	0
36 APPAREL/FURNISHINGS SERVICE OCCUPATIONS	1	3.75	1	3.75	0	0
361 LAUNDERING SERVICE	1	3.75	1	3.75	0	0
37 PROTECTIVE SERVICE OCCUPATIONS	44	3.49	26	3.54	11	3.35
372 SEC.GRDS/CORR.OFFICERS EXC.CROSS.TENDERS	44	3.49	26	3.54	11	3.35
38 BUILDING AND RELATED SERVICE OCCUPATIONS	6	3.54	5	3.55	0	0
381 PORTERS AND CLEANERS	5	3.50	4	3.50	0	0
382 JANITORS	1	3.75	1	3.75	0	0
5 PROCESSING	1	5.00	1	5.00	0	0
52 PROC. FOOD, TOBACCO, AND RELATED PRODUCTS	1	5.00	1	5.00	0	0
526 COOKING AND BAKING OCCUPATIONS, N.E.C.	1	5.00	1	5.00	0	0
6 MACHINE TRADES	24	5.34	22	5.46	5	5.34
60 METAL MACHINING OCCUPATIONS	4	5.63	3	6.17	1	4.50
600 MACHINISTS AND RELATED OCCUPATIONS	2	7.00	2	7.00	0	0
603 ABRADING	1	4.50	1	4.50	1	4.50
606 BORING	1	4.00	0	0	0	0
61 METALWORKING OCCUPATION, N.E.C.	3	4.42	2	4.50	1	4.50
616 FABRICATING MACHINE WORK	2	4.38	1	4.50	0	0

TABLE 2--TOTAL ES JOB BANK OPENINGS AND AVERAGE PAY
BY OCCUPATIONAL CATEGORY, DIVISION AND JOB TITLE
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE TOTAL	OPENINGS AVAILABLE AVERAGE PAY	OPENINGS UNFILLED TOTAL	OPENINGS UNFILLED AVERAGE PAY	OPENINGS UNFILLED 30 DAYS TOTAL	OPENINGS UNFILLED 30 DAYS AVERAGE PAY
617 FORMING OCCUPATIONS, N.E.C.	1	$ 4.50	1	$ 4.50	1	$ 4.50
62 MECHANICS AND MACHINERY REPAIRERS	8	5.28	8	5.28	3	5.90
620 MTR. VEHICLE & ENGINEER. EQUIP.MECHANICS	8	5.28	8	5.28	3	5.90
63 MECHANICS AND MACHINERY REPAIRERS	6	6.12	6	6.12	0	0
630 GENERAL INDUSTRY MACHINERY MECHANICS	3	5.50	3	5.50	0	0
637 UTILITY SERVICE MECHANICS/REPAIRERS	1	8.00	1	8.00	0	0
638 MISC.MACHINE INSTALLATION & REPAIR OCCS.	2	6.09	2	6.09	0	0
64 PAPERWORKING OCCUPATIONS	2	4.35	2	4.35	0	0
649 PAPERWORKING OCCUPATIONS, N.E.C.	2	4.35	2	4.35	0	0
68 TEXTILE OCCUPATIONS	1	4.88	1	4.88	0	0
683 WEAVING AND RELATED WORK	1	4.88	1	4.88	0	0
7 BENCH WORK	47	3.99	37	4.03	7	4.64
72 ASSEMBLY AND REPAIR OF ELECTRICAL EQUIP.	33	3.82	27	3.88	3	3.83
724 COILS,MAGNETS, ARMATURES WINDING & ASSEM	4	3.50	4	3.50	0	0
726 ASSEM. & REP. OF ELEC.COMPON.& ACC., NEC	25	3.85	19	3.94	1	4.50
728 OCCS.IN FABRICATION OF ELEC.WIRE & CABLE	1	3.75	1	3.75	0	0
729 ASSEM. & REPAIR OF ELECTRICAL EQUIP.,NEC	3	4.00	3	4.00	2	3.50
73 FAB/REPAIR OF PROD. MADE FROM ASST.MATER	2	3.75	1	3.75	0	0
739 FAB/REP.OF PROD.MADE FROM ASSORT.MATS.NEC	2	3.75	1	3.75	0	0
74 PAINTING, DECORATING AND RELATED OCCS.	4	5.50	3	5.67	3	5.67

TABLE 2--TOTAL ES JOB BANK OPENINGS AND AVERAGE PAY
BY OCCUPATIONAL CATEGORY, DIVISION AND JOB TITLE
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE TOTAL	OPENINGS AVAILABLE AVERAGE PAY	OPENINGS UNFILLED TOTAL	OPENINGS UNFILLED AVERAGE PAY	OPENINGS UNFILLED 30 DAYS TOTAL	OPENINGS UNFILLED 30 DAYS AVERAGE PAY
740 PAINTERS, BRUSH	2	$ 6.00	2	$ 6.00	2	$ 6.00
741 SPRAY PAINTING	2	5.00	1	5.00	1	5.00
78 FAB/REP OF TEXTILE, LEATHER & REL. PROD.	8	3.98	6	3.96	1	4.00
780 UPHOLSTERING & FAB.& REP.OF MATTRESS/BEDS	8	3.98	6	3.96	1	4.00
8 STRUCTURAL WORK	34	5.60	29	5.57	12	4.93
80 OCCUPATIONS IN METAL FABRIACTION, N.E.C.	13	6.42	11	6.32	3	4.50
804 TINSMITHS,COPPERSMIT HS&SHT.MTL.WORKERS	10	7.00	8	7.00	0	0
807 BODY WORK,TRANSPORT. EQUIPMENT	3	4.50	3	4.50	3	4.50
82 ELECTRICAL ASSEMB., INST., AND REPAIRING	4	4.56	4	4.56	1	5.00
824 LIGHT.EQU. & BLD.WIR ASSEM.INST.REP, NEC	1	5.00	1	5.00	1	5.00
828 ELEC. & ELEC. PROD. FAB.,INSTALL.REP.NEC	3	4.42	3	4.42	0	0
84 PAINTING, PLASTERING WATERPT., CEMENTING	8	4.88	8	4.88	5	4.40
840 CONSTRUCTION AND MAINT. PAINTERS	4	3.50	4	3.50	4	3.50
841 PAPERHANGING	1	8.00	1	8.00	1	8.00
844 CEMENT AND CONCRETE FINISHING & RELATED	3	5.67	3	5.67	0	0
85 EXCAVATING,GRADING, PAVING, & REL. OCCS.	1	6.00	1	6.00	0	0
859 EXCAVATING, GRADING PAVING &REL.OCCS.NEC	1	6.00	1	6.00	0	0
86 CONSTRUCTION OCCUPATIONS, N.E.C.	6	5.78	4	5.92	2	6.85
860 CARPENTRY AND RELATED WORK	2	6.00	1	6.00	1	6.00
862 PLUMBERS,GAS FITTING STEAM FITTING OCCS.	1	7.69	1	7.69	1	7.69
869 MISCELLANEOUS CONST-RUCTION WORK, N.E.C.	3	5.00	2	5.00	0	0

TABLE 2--TOTAL ES JOB BANK OPENINGS AND AVERAGE PAY
BY OCCUPATIONAL CATEGORY, DIVISION AND JOB TITLE
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE TOTAL	OPENINGS AVAILABLE AVERAGE PAY	OPENINGS UNFILLED TOTAL	OPENINGS UNFILLED AVERAGE PAY	OPENINGS UNFILLED 30 DAYS TOTAL	OPENINGS UNFILLED 30 DAYS AVERAGE PAY
89 STRUCTURAL WORK OCCU PATIONS, N.E.C.	2	$ 4.50	1	$ 5.00	1	$ 5.00
899 MISC. STRUCTURAL WORK OCCS., N.E.C.	2	4.50	1	5.00	1	5.00
9 MISCELLANEOUS	33	4.19	21	3.98	3	4.24
90 MOTOR FREIGHT OCCUPATIONS	1	5.75	0	0	0	0
905 HEAVY TRUCK DRIVING	1	5.75	0	0	0	0
92 PACKAGING/MATERIALS HANDLING OCCUPATIONS	30	4.15	19	3.98	3	4.24
920 PACKAGING OCCUPATIONS	11	3.82	8	3.79	1	3.50
929 PACKAGING/MATERIALS HANDLING OCCS,N.E.C.	19	4.34	11	4.12	2	4.62
93 EXTRACTION OF MINERA LS OCCUPATIONS	2	4.00	2	4.00	0	0
930 EARTH BORING,DRILLIN G CUTTING & REL.WORK	2	4.00	2	4.00	0	0

TABLE 3--ES JOB BANK OPENINGS IN REPORTING DISTRICTS
BY OCCUPATIONAL CATEGORY, DIVISION AND GROUP
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE		OPENINGS UNFILLED				TOTALS FROM A MONTH EARLIER		
				30 DAYS OR MORE				OPENINGS UNFILLED	
	TOTAL	% DISTRIB	TOTAL	TOTAL	AS A % OF UNFILLED	OPENINGS AVAILABLE	TOTAL	30 DAYS OR MORE
TOTAL, ALL OCCUPATIONS	290	100.0000%	235	52	22.13%	238	94	53
0 & 1 PROFESSIONAL, TECHNICAL, AND MANAGERIAL	38	13.1034%	38	1	2.63%	24	14	14
003 ELECTRICAL AND ELECTRONICS ENGINEERING	19	6.5517%	19	0	.00%	1	1	1
007 MECHANICAL ENGINEERING	3	1.0345%	3	0	.00%	1	1	1
01 ARCHITECTURE AND ENGINEERING	3	1.0345%	3	0	.00%	1	0	0
012 INDUSTRIAL ENGINEERING	2	.6897%	2	0	.00%	1	0	0
019 ARCHITECTURE AND ENGINEERING, N.E.C.	1	.3448%	1	0	.00%	0	0	0
02 MATHEMATICS AND PHYSICAL SCIENCES	7	2.4138%	7	0	.00%	1	1	1
020 MATHEMATICS	4	1.3793%	4	0	.00%	1	1	1
022 CHEMISTRY	2	.6897%	2	0	.00%	0	0	0
029 MATHEMATICS & PHYSICAL SCIENCES, N.E.C.	1	.3448%	1	0	.00%	0	0	0
04 LIFE SCIENCES	1	.3448%	1	0	.00%	0	0	0
045 PSYCHOLOGY	1	.3448%	1	0	.00%	0	0	0
07 MEDICINE AND HEALTH	3	1.0345%	3	1	33.33%	11	11	11
075 REGISTERED NURSES	0	.0000%	0	0	.00	5	5	5
078 MEDICAL AND DENTAL TECHNOLOGY	2	.6897%	2	1	50.00%	1	1	1
079 MEDICINE AND HEALTH, N.E.C	1	.3448%	1	0	.00%	5	5	5
09 EDUCATION	0	.0000%	0	0	.00	2	0	0
091 SECONDARY SCHOOL EDUCATION	0	.0000%	0	0	.00	2	0	0
13 WRITING	1	.3448%	1	0	.00%	0	0	0
131 WRITERS	1	.3448%	1	0	.00%	0	0	0
16 ADMINISTRATIVE SPECIALIZATIONS	0	.0000%	0	0	.00	5	0	0

TABLE 3--ES JOB BANK OPENINGS IN REPORTING DISTRICTS
BY OCCUPATIONAL CATEGORY, DIVISION AND GROUP
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE TOTAL	OPENINGS AVAILABLE % DISTRIB	OPENINGS UNFILLED TOTAL	OPENINGS UNFILLED 30 DAYS OR MORE TOTAL	OPENINGS UNFILLED 30 DAYS OR MORE AS A % OF UNFILLED	TOTALS FROM A MONTH EARLIER OPENINGS AVAILABLE	TOTALS FROM A MONTH EARLIER OPENINGS UNFILLED TOTAL	TOTALS FROM A MONTH EARLIER OPENINGS UNFILLED 30 DAYS OR MORE
163 SALES AND DISTRIB. MANAGEMENT	0	.0000%	0	0	.00	2	0	0
166 PERSONNEL AND TRAINING ADMINIS.	0	.0000%	0	0	.00	3	0	0
18 MANAGERS AND OFFICIALS, N.E.C.	1	.3448%	1	0	.00%	1	0	0
185 WHOLESALE AND RETAIL TRADE MANAGEMENT	0	.0000%	0	0	.00	1	0	0
186 FINANCE, INS., AND REAL ESTATE MANAG.	1	.3448%	1	0	.00%	0	0	0
19 MISC. PROFESSIONAL, TECHNICAL,MANAGERIAL	0	.0000%	0	0	.00	1	0	0
195 SOCIAL AND WELFARE WORK	0	.0000%	0	0	.00	1	0	0
2 CLERICAL AND SALES	53	18.2759%	47	10	21.28%	65	26	13
20 STENOGRAPHY, TYPING, FILING, AND RELATED	27	9.3103%	25	7	28.00%	29	12	4
201 SECRETARIES	8	2.7586%	8	1	12.50%	2	1	0
203 TYPISTS & TYPEWRITING MACHINE OPERATORS	6	2.0690%	6	2	33.33%	11	3	0
206 FILE CLERKS	0	.0000%	0	0	.00	2	2	2
209 STENOGRAPHY,TYPING FILING & REL WRK NEC	13	4.4828%	11	4	36.36%	- 14	6	2
21 COMPUTING AND ACCOUNT-RECORDING	4	1.3793%	3	2	66.67%	24	12	9
210 BOOKKEEPERS & BOOKKEEPING MACHINE OPS.	0	.0000%	0	0	.00	1	0	0
211 CASHIERS AND TELLERS	2	.6897%	1	0	.00%	10	5	5
213 ELCTRNC/ELECTROMECHANICAL DATA PROCESSOR	1	.3448%	1	1	100.00%	1	1	0
214 BILLING AND RATE CLERKS	1	.3448%	1	1	100.00%	3	1	0
215 PAYROLL,TIMEKEEPING & DUTY ROSTER-CLERKS	0	.0000%	0	0	.00	1	1	1
216 ACCOUNTING AND STATISTICAL CLERKS	0	.0000%	0	0	.00	4	1	0

TABLE 3--ES JOB BANK OPENINGS IN REPORTING DISTRICTS
BY OCCUPATIONAL CATEGORY, DIVISION AND GROUP
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE		OPENINGS UNFILLED				TOTALS FROM A MONTH EARLIER	
				30 DAYS OR MORE			OPENINGS UNFILLED	
	TOTAL	% DISTRIB	TOTAL	TOTAL	AS A % OF UNFILLED	OPENINGS AVAILABLE	TOTAL	30 DAYS OR MORE
219 COMPUTING AND ACCOUNT RECORDING	0	.0000%	0	0	.00	4	3	3
22 PRODUCTION AND STOCK CLERKS	8	2.7586%	5	1	20.00%	8	1	0
221 PRODUCTION CLERKS	2	.6897%	2	1	50.00%	1	1	0
222 SHIPPING, RECEIVING, AND STOCK CLERKS	6	2.0690%	3	0	.00%	7	0	0
23 INFORMATION AND MESSAGE DISTRIBUTION	0	.0000%	0	0	.00	3	1	0
230 HAND DELIVERY AND DISTRIBUTION	0	.0000%	0	0	.00	1	0	0
237 INFORMATION AND RECEPTION CLERKS	0	.0000%	0	0	.00	2	1	0
24 MISCELLANEOUS CLERICAL	3	1.0345%	3	0	.00%	1	0	0
249 MISCELLANEOUS CLERICAL WORK, N.E.C.	3	1.0345%	3	0	.00%	1	0	0
26 SALESPERSON, CONSUMABLE COMMODITIES	5	1.7241%	5	0	.00%	0	0	0
261 SALESWORK,TEXTILE PROD,APPAREL & NOTIONS	5	1.7241%	5	0	.00%	0	0	0
27 SALESPERSONS, COMMODITIES, N.E.C.	5	1.7241%	5	0	.00%	0	0	0
279 SALES OCCS., MISC. COMMODITIES, N.E.C.	5	1.7241%	5	0	.00%	0	0	0
29 MISCELLANEOUS SALES OCCUPATIONS	1	.3448%	1	0	.00%	0	0	0
290 SALES CLERKS	1	.3448%	1	0	.00%	0	0	0
3 SERVICE	60	20.6897%	40	14	35.00%	43	14	9
30 DOMESTIC SERVICE	0	.0000%	0	0	.00	1	0	0
301 HOUSEHOLD AND RELATED WORK	0	.0000%	0	0	.00	1	0	0
31 FOOD & BEVERAGE PREPARATION & SVC. OCCS.	8	2.7586%	7	3	42.86%	9	3	1

TABLE 3--ES JOB BANK OPENINGS IN REPORTING DISTRICTS
BY OCCUPATIONAL CATEGORY, DIVISION AND GROUP
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE: TOTAL	OPENINGS AVAILABLE: % DISTRIB	OPENINGS UNFILLED: TOTAL	OPENINGS UNFILLED: 30 DAYS OR MORE: TOTAL	OPENINGS UNFILLED: 30 DAYS OR MORE: AS A % OF UNFILLED	TOTALS FROM A MONTH EARLIER: OPENINGS AVAILABLE	TOTALS FROM A MONTH EARLIER: OPENINGS UNFILLED: TOTAL	TOTALS FROM A MONTH EARLIER: OPENINGS UNFILLED: 30 DAYS OR MORE
311 WAITERS/WAITRESSES	0	.0000%	0	0	.00	3	0	0
313 CHEFS AND COOKS, HOTELS & RESTAURANTS	2	.6897%	2	0	.00%	3	0	0
315 MISCELLANEOUS COOKS, EXCEPT DOMESTIC	1	.3448%	1	1	100.00%	1	1	0
318 KITCHEN WORKERS, N.E.C.	4	1.3793%	3	2	66.67%	2	2	1
319 FOOD/BEVERAGE PREPARATION & SVC., N.E.C.	1	.3448%	1	0	.00%	0	0	0
32 LODGING AND RELATED SERVICE OCCUPATIONS	1	.3448%	1	0	.00%	0	0	0
321 HOUSEKEEPERS,HOTELS AND INSTITUTIONS	1	.3448%	1	0	.00%	0	0	0
34 AMUSEMENT & RECREATION SVC. OCCUPATIONS	0	.0000%	0	0	.00	1	0	0
341 GOLF COURSE,TENNIS CT & SKATE RINK ATTN	0	.0000%	0	0	.00	1	0	0
35 MISC. PERSONAL SERVICE OCCUPATIONS	0	.0000%	0	0	.00	9	7	7
354 UNLICENSED BIRTH ATT END. & PRACT. NURSES	0	.0000%	0	0	.00	5	5	5
355 ATTEN.WORK,HOSPITALS MORG.AND REL.HEALT.S	0	.0000%	0	0	.00	4	2	2
36 APPAREL/FURNISHINGS SERVICE OCCUPATIONS	1	.3448%	1	0	.00%	3	1	1
361 LAUNDERING SERVICE	1	.3448%	1	0	.00%	0	0	0
369 APPAREL/FURNISHINGS SERVICE OCCS.,N.E.C.	0	.0000%	0	0	.00	3	1	1
37 PROTECTIVE SERVICE OCCUPATIONS	44	15.1724%	26	11	42.31%	16	3	0
372 SEC.GRDS/CORR.OFFICERS EXC.CROSS.TENDERS	44	15.1724%	26	11	42.31%	16	3	0
38 BUILDING AND RELATED SERVICE OCCUPATIONS	6	2.0690%	5	0	.00%	4	0	0
381 PORTERS AND CLEANERS	5	1.7241%	4	0	.00%	2	0	0
382 JANITORS	1	.3448%	1	0	.00%	2	0	0

TABLE 3--ES JOB BANK OPENINGS IN REPORTING DISTRICTS
BY OCCUPATIONAL CATEGORY, DIVISION AND GROUP
LOWELL MASSACHUSETTS
MARCH 1981

	JOB TITLE	OPENINGS AVAILABLE TOTAL	OPENINGS AVAILABLE % DISTRIB	OPENINGS UNFILLED TOTAL	OPENINGS UNFILLED 30 DAYS OR MORE TOTAL	OPENINGS UNFILLED 30 DAYS OR MORE AS A % OF UNFILLED	TOTALS FROM A MONTH EARLIER OPENINGS AVAILABLE	TOTALS FROM A MONTH EARLIER OPENINGS UNFILLED TOTAL	TOTALS FROM A MONTH EARLIER OPENINGS UNFILLED 30 DAYS OR MORE
4	FARMING, FISHERY, FORESTRY, AND RELATED	0	.0000%	0	0	.00	1	0	0
	41 ANIMAL FARMING OCCUPATIONS	0	.0000%	0	0	.00	1	0	0
	410 DOMESTIC ANIMAL FARMING OCCUPATIONS	0	.0000%	0	0	.00	1	0	0
5	PROCESSING	1	.3448%	1	0	.00%	3	0	0
	52 PROC. FOOD, TOBACCO, AND RELATED PRODUCTS	1	.3448%	1	0	.00%	0	0	0
	526 COOKING AND BAKING OCCUPATIONS, N.E.C.	1	.3448%	1	0	.00%	0	0	0
	59 PROCESSING OCCUPATIONS, N.E.C.	0	.0000%	0	0	.00	3	0	0
	599 MISCELLANEOUS PROCESSING, N.E.C.	0	.0000%	0	0	.00	3	0	0
6	MACHINE TRADES	24	8.2759%	22	5	22.73%	26	8	3
	60 METAL MACHINING OCCUPATIONS	4	1.3793%	3	1	33.33%	10	4	1
	600 MACHINISTS AND RELATED OCCUPATIONS	2	.6897%	2	0	.00%	4	2	1
	603 ABRADING	1	.3448%	1	1	100.00%	4	1	0
	606 BORING	1	.3448%	0	0	.00	2	1	0
	61 METALWORKING OCCUPATION, N.E.C.	3	1.0345%	2	1	50.00%	8	1	0
	616 FABRICATING MACHINE WORK	2	.6897%	1	0	.00%	3	0	0
	617 FORMING OCCUPATIONS, N.E.C.	1	.3448%	1	1	100.00%	1	1	0
	619 MISC. METALWORKING OCCUPATIONS, N.E.C.	0	.0000%	0	0	.00	4	0	0
	62 MECHANICS AND MACHINERY REPAIRERS	8	2.7586%	8	3	37.50%	4	3	2

TABLE 3--ES JOB BANK OPENINGS IN REPORTING DISTRICTS
BY OCCUPATIONAL CATEGORY, DIVISION AND GROUP
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE		OPENINGS UNFILLED			TOTALS FROM A MONTH EARLIER		
				30 DAYS OR MORE			OPENINGS UNFILLED	
	TOTAL	% DISTRIB	TOTAL	TOTAL	AS A % OF UNFILLED	OPENINGS AVAILABLE	TOTAL	30 DAYS OR MORE
620 MTR. VEHICLE & ENGINEER. EQUIP.MECHANICS	8	2.7586%	8	3	37.50%	4	3	2
63 MECHANICS AND MACHINERY REPAIRERS	6	2.0690%	6	0	.00%	0	0	0
630 GENERAL INDUSTRY MACHINERY MECHANICS	3	1.0345%	3	0	.00%	0	0	0
637 UTILITY SERVICE MECHANICS/REPAIRERS	1	.3448%	1	0	.00%	0	0	0
638 MISC.MACHINE INSTALLATION & REPAIR OCCS.	2	.6897%	2	0	.00%	0	0	0
64 PAPERWORKING OCCUPATIONS	2	.6897%	2	0	.00%	1	0	0
649 PAPERWORKING OCCUPATIONS, N.E.C.	2	.6897%	2	0	.00%	1	0	0
68 TEXTILE OCCUPATIONS	1	.3448%	1	0	.00%	1	0	0
683 WEAVING AND RELATED WORK	1	.3448%	1	0	.00%	0	0	0
689 TEXTILE OCCUPATIONS, N.E.C.	0	.0000%	0	0	.00	1	0	0
69 MACHINE TRADES OCCUPATIONS, N.E.C.	0	.0000%	0	0	.00	2	0	0
691 FABRICATION OF INSULATION WIRE & CABLE	0	.0000%	0	0	.00	1	0	0
699 MISC. MACHINE WORK OCCUPATIONS, N.E.C.	0	.0000%	0	0	.00	1	0	0
7 BENCH WORK	47	16.2069%	37	7	18.92%	20	12	6
71 FAB/REP SCIENT, MED, PHOTO,OPT,HOR,REL.PD	0	.0000%	0	0	.00	1	0	0
710 FAB.REP.INS.FOR MEAS ,CON. & IND.PHY,CHAR	0	.0000%	0	0	.00	1	0	0
72 ASSEMBLY AND REPAIR OF ELECTRICAL EQUIP.	33	11.3793%	27	3	11.11%	9	5	4
724 COILS,MAGNETS, ARMATURES WINDING & ASSEM	4	1.3793%	4	0	.00%	0	0	0
726 ASSEM. & REP. OF ELEC.COMPON.& ACC., NEC	25	8.6207%	19	1	5.26%	6	2	2

TABLE 3--ES JOB BANK OPENINGS IN REPORTING DISTRICTS
BY OCCUPATIONAL CATEGORY, DIVISION AND GROUP
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE TOTAL	OPENINGS AVAILABLE % DISTRIB	OPENINGS UNFILLED TOTAL	OPENINGS UNFILLED 30 DAYS OR MORE TOTAL	OPENINGS UNFILLED 30 DAYS OR MORE AS A % OF UNFILLED	TOTALS FROM A MONTH EARLIER OPENINGS AVAILABLE	TOTALS FROM A MONTH EARLIER OPENINGS UNFILLED TOTAL	TOTALS FROM A MONTH EARLIER OPENINGS UNFILLED 30 DAYS OR MORE
728 OCCS.IN FABRICATION OF ELEC.WIRE & CABLE	1	.3448%	1	0	.00%	0	0	0
729 ASSEM. & REPAIR OF ELECTRICAL EQUIP.,NEC	3	1.0345%	3	2	66.67%	3	3	2
73 FAB/REPAIR OF PROD. MADE FROM ASST.MATER	2	.6897%	1	0	.00%	0	0	0
739 FAB/REP.OF PROD.MADE FROM ASSORT.MATS.NEC	2	.6897%	1	0	.00%	0	0	0
74 PAINTING, DECORATING AND RELATED OCCS.	4	1.3793%	3	3	100.00%	5	4	0
740 PAINTERS, BRUSH	2	.6897%	2	2	100.00%	2	2	0
741 SPRAY PAINTING	2	.6897%	1	1	100.00%	3	2	0
78 FAB/REP OF TEXTILE, LEATHER & REL. PROD.	8	2.7586%	6	1	16.67%	5	3	2
780 UPHOLSTERING & FAB.& REP.OF MATTRESS/BEDS	8	2.7586%	6	1	16.67%	2	2	2
781 LAY. OUT,MARK.,CUT. & PUNCH. OCCS., NEC	0	.0000%	0	0	.00	1	0	0
788 OCCS.IN FABRICATION & REPAIR OF FOOTWEAR	0	.0000%	0	0	.00	1	1	0
789 FAB/REP TEXTILE,LEATHER & REL PROD. NEC	0	.0000%	0	0	.00	1	0	0
8 STRUCTURAL WORK	34	11.7241%	29	12	41.38%	23	16	7
80 OCCUPATIONS IN METAL FABRIACTION, N.E.C.	13	4.4828%	11	3	27.27%	3	2	2
804 TINSMITHS,COPPERSMITHS&SHT.MTL.WORKERS	10	3.4483%	8	0	.00%	1	0	0
807 BODY WORK,TRANSPORT. EQUIPMENT	3	1.0345%	3	3	100.00%	2	2	2
81 WELDERS, CUTTERS AND RELATED OCCUPATIONS	0	.0000%	0	0	.00	1	0	0
810 ARC WELDERS AND CUTTERS	0	.0000%	0	0	.00	1	0	0
82 ELECTRICAL ASSEMB., INST., AND REPAIRING	4	1.3793%	4	1	25.00%	2	1	0

TABLE 3--ES JOB BANK OPENINGS IN REPORTING DISTRICTS
BY OCCUPATIONAL CATEGORY, DIVISION AND GROUP
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE: TOTAL	OPENINGS AVAILABLE: % DISTRIB	OPENINGS UNFILLED: TOTAL	OPENINGS UNFILLED: 30 DAYS OR MORE: TOTAL	OPENINGS UNFILLED: 30 DAYS OR MORE: AS A % OF UNFILLED	TOTALS FROM A MONTH EARLIER: OPENINGS AVAILABLE	TOTALS FROM A MONTH EARLIER: OPENINGS UNFILLED: TOTAL	TOTALS FROM A MONTH EARLIER: OPENINGS UNFILLED: 30 DAYS OR MORE
824 LIGHT.EQU. & BLD.WIR ASSEM.INST.REP, NEC	1	.3448%	1	1	100.00%	1	1	0
828 ELEC. & ELEC. PROD. FAB.,INSTALL.REP.NEC	3	1.0345%	3	0	.00%	1	0	0
84 PAINTING, PLASTERING WATERPT., CEMENTING	8	2.7586%	8	5	62.50%	5	5	0
840 CONSTRUCTION AND MAINT. PAINTERS	4	1.3793%	4	4	100.00%	4	4	0
841 PAPERHANGING	1	.3448%	1	1	100.00%	1	1	0
844 CEMENT AND CONCRETE FINISHING & RELATED	3	1.0345%	3	0	.00%	0	0	0
85 EXCAVATING,GRADING, PAVING, & REL. OCCS.	1	.3448%	1	0	.00%	0	0	0
859 EXCAVATING, GRADING PAVING &REL.OCCS.NEC	1	.3448%	1	0	.00%	0	0	0
86 CONSTRUCTION OCCUPATIONS, N.E.C.	6	2.0690%	4	2	50.00%	7	5	4
860 CARPENTRY AND RELATED WORK	2	.6897%	1	1	100.00%	3	1	1
862 PLUMBERS,GAS FITTING STEAM FITTING OCCS.	1	.3448%	1	1	100.00%	1	1	0
869 MISCELLANEOUS CONSTRUCTION WORK, N.E.C.	3	1.0345%	2	0	.00%	3	3	3
89 STRUCTURAL WORK OCCUPATIONS, N.E.C.	2	.6897%	1	1	100.00%	5	3	1
899 MISC. STRUCTURAL WORK OCCS., N.E.C.	2	.6897%	1	1	100.00%	5	3	1
9 MISCELLANEOUS	33	11.3793%	21	3	14.29%	33	4	1
90 MOTOR FREIGHT OCCUPATIONS	1	.3448%	0	0	.00	3	1	0
905 HEAVY TRUCK DRIVING	1	.3448%	0	0	.00	1	0	0
906 LIGHT TRUCK DRIVING	0	.0000%	0	0	.00	2	1	0
91 TRANSPORTATION OCCUPATIONS, N.E.C.	0	.0000%	0	0	.00	2	1	0
915 PARKING LOT & AUTO. SERVICE FACILITIES	0	.0000%	0	0	.00	2	1	0

TABLE 3--ES JOB BANK OPENINGS IN REPORTING DISTRICTS
BY OCCUPATIONAL CATEGORY, DIVISION AND GROUP
LOWELL MASSACHUSETTS
MARCH 1981

JOB TITLE	OPENINGS AVAILABLE		OPENINGS UNFILLED				TOTALS FROM A MONTH EARLIER		
				30 DAYS OR MORE				OPENINGS UNFILLED	
	TOTAL	% DISTRIB	TOTAL	TOTAL	AS A % OF UNFILLED	OPENINGS AVAILABLE	TOTAL	30 DAYS OR MORE
92 PACKAGING/MATERIALS HANDLING OCCUPATIONS	30	10.3448%	19	3	15.79%	28	2	1
920 PACKAGING OCCUPATIONS	11	3.7931%	8	1	12.50%	20	2	1
929 PACKAGING/MATERIALS HANDLING OCCS,N.E.C.	19	6.5517%	11	2	18.18%	8	0	0
93 EXTRACTION OF MINERALS OCCUPATIONS	2	.6897%	2	0	.00%	0	0	0
930 EARTH BORING,DRILLING CUTTING & REL.WORK	2	.6897%	2	0	.00%	0	0	0

TABLE 5--ES JOB BANK OPENINGS IN REPORTING DISTRICTS
AND PERCENT DISTRIBUTION OF JOB BANK OPENINGS BY SELECTED INDUSTRY GROUP
LOWELL MASSACHUSETTS
MARCH 1981

SELECTED INDUSTRY GROUP	OPENINGS AVAILABLE	OPENINGS UNFILLED			PERCENT DISTRIBUTION OF OPENINGS		
			30 DAYS OR MORE				
	TOTAL	TOTAL	TOTAL	AS A % OF TOTAL UNFILLED	AVAILABLE	UNFILLED	UNFILLED 30
TOTAL OPENINGS, ALL INDUSTRIES	290	235	52	22.13%	100.00%	100.00%	100.00%
TOTAL CONSTRUCTION (15-17)	13	12	8	66.67%	4.48%	5.11%	15.38%
BLDG. CONST.-GEN. CONTR. & OPER. BLDR. (15)	2	1	1	100.00%	15.38%	8.33%	12.50%
CONSTRUCTION--SPECIAL TRADE CONTRACTORS(17)	11	11	7	63.64%	84.62%	91.67%	87.50%
TOTAL MANUFACTURING (20-39)	158	139	16	11.51%	54.48%	59.15%	30.77%
DURABLE GOODS (24,25,32-39)	124	108	13	12.04%	78.48%	77.70%	81.25%
FURNITURE AND FIXTURES (25)	3	2	1	50.00%	2.42%	1.85%	7.69%
STONE, CLAY, GLASS, AND CONCRETE PROD. (32)	10	8	1	12.50%	8.06%	7.41%	7.69%
FAB. MET. PRO., EX. MACH.&TRANS. EQUIP.(34)	19	16	7	43.75%	15.32%	14.81%	53.85%
MACHINERY, EXCEPT ELECTRICAL (35)	26	18	2	11.11%	20.97%	16.67%	15.38%
ELEC. AND ELEC. MACH., EQUIP., AND SUP.(36)	33	33	2	6.06%	26.61%	30.56%	15.38%
INSTRUMENTS, OPTICAL GOODS, TIME PIECES(38)	33	31	0	.00%	26.61%	28.70%	.00%
NONDURABLE GOODS (20-23,26-31)	34	31	3	9.68%	21.52%	22.30%	18.75%
FOOD AND KINDRED PRODUCTS (20)	5	4	2	50.00%	14.71%	12.90%	66.67%
TEXTILE MILL PRODUCTS (22)	7	6	1	16.67%	20.59%	19.35%	33.33%
APPAREL AND OTHER FINISHED PROD.,FAB. (23)	4	4	0	.00%	11.76%	12.90%	.00%
CHEMICALS AND ALLIED PRODUCTS (28)	10	10	0	.00%	29.41%	32.26%	.00%
RUBBER AND MISC. PLASTICS PRODUCTS (30)	6	6	0	.00%	17.65%	19.35%	.00%
LEATHER AND LEATHER PRODUCTS (31)	2	1	0	.00%	5.88%	3.23%	.00%
TOTAL TRANS., COMM., ELEC., GAS, SAN. SVC (40-49)	1	1	1	100.00%	.34%	.43%	1.92%
MOTOR FREIGHT TRANSPORT. AND WAREHOUS. (42)	1	1	1	100.00%	100.00%	100.00%	100.00%
TOTAL WHOLESALE TRADE (50-51)	8	2	2	100.00%	2.76%	.85%	3.85%
WHOLESALE TRADE--DURABLE GOODS (50)	8	2	2	100.00%	100.00%	100.00%	100.00%
TOTAL RETAIL TRADE (52-59)	33	26	5	19.23%	11.38%	11.06%	9.62%
BLDG. MAT., HH, GAR. SUP., MOB.HM DEAL(52)	2	1	0	.00%	6.06%	3.85%	.00%
GENERAL MERCHANDISE STORES (53)	19	14	1	7.14%	57.58%	53.85%	20.00%
AUTOMOTIVE DEALERS AND GAS SVC. STATION(55)	6	6	2	33.33%	18.18%	23.08%	40.00%
EATING AND DRINKING PLACES (58)	6	5	2	40.00%	18.18%	19.23%	40.00%
TOTAL FINANCE, INSURANCE, AND REAL ESTATE (60-67)	5	5	0	.00%	1.72%	2.13%	.00%
INSURANCE (63)	1	1	0	.00%	20.00%	20.00%	.00%

TABLE 5--ES JOB BANK OPENINGS IN REPORTING DISTRICTS
AND PERCENT DISTRIBUTION OF JOB BANK OPENINGS BY SELECTED INDUSTRY GROUP
LOWELL MASSACHUSETTS
MARCH 1981

SELECTED INDUSTRY GROUP	OPENINGS AVAILABLE	OPENINGS UNFILLED			PERCENT DISTRIBUTION OF OPENINGS		
			30 DAYS OR MORE				
	TOTAL	TOTAL	TOTAL	AS A % OF TOTAL UNFILLED	AVAILABLE	UNFILLED	UNFILLED 30
TOTAL FINANCE, INSURANCE, AND REAL ESTATE (60-67)							
REAL ESTATE (65)	4	4	0	.00%	80.00%	80.00%	.00%
TOTAL SERVICES (70-89)	72	50	20	40.00%	24.83%	21.28%	38.46%
BUSINESS SERVICES (73)	47	29	13	44.83%	65.28%	58.00%	65.00%
AUTOMOTIVE REPAIR, SERVICES, & GARAGES (75)	5	5	4	80.00%	6.94%	10.00%	20.00%
MISCELLANEOUS REPAIR SERVICES (76)	4	2	1	50.00%	5.56%	4.00%	5.00%
HEALTH SERVICES (80)	12	11	2	18.18%	16.67%	22.00%	10.00%
EDUCATIONAL SERVICES (82)	1	0	0	.00%	1.39%	.00%	.00%
SOCIAL SERVICES (83)	2	2	0	.00%	2.78%	4.00%	.00%
PRIVATE HOUSEHOLDS (88)	1	1	0	.00%	1.39%	2.00%	.00%

TABLE 6--TOTAL ES JOB BANK OPENINGS AND AVERAGE PAY
BY SELECTED INDUSTRY GROUP
LOWELL MASSACHUSETTS
MARCH 1981

SELECTED INDUSTRY GROUP	OPENINGS AVAILABLE		OPENINGS UNFILLED		OPENINGS UNFILLED 30 DAYS	
	TOTAL	AVERAGE PAY	TOTAL	AVERAGE PAY	TOTAL	AVERAGE PAY
TOTAL OPENINGS, ALL INDUSTRIES	290	$ 10,068	235	$ 10,471	52	$ 9,209
TOTAL CONSTRUCTION (15-17)	13	11,040	12	10,920	8	10,400
BLDG. CONST.-GEN. CONTR. & OPER. BLDR. (15)	2	12,480	1	12,480	1	12,480
CONSTRUCTION--SPECIAL TRADE CONTRACTORS(17)	11	10,778	11	10,778	7	10,103
TOTAL MANUFACTURING (20-39)	158	11,348	139	11,706	16	9,059
DURABLE GOODS (24,25,32-39)	124	11,347	108	11,708	13	9,027
FURNITURE AND FIXTURES (25)	3	7,973	2	7,800	1	8,320
STONE, CLAY, GLASS, AND CONCRETE PROD. (32)	10	9,210	8	9,006	1	0
FAB. MET. PRO., EX. MACH.&TRANS. EQUIP.(34)	19	11,798	16	11,735	7	8,994
MACHINERY, EXCEPT ELECTRICAL (35)	26	8,738	18	9,149	2	9,680
ELEC. AND ELEC. MACH., EQUIP., AND SUP.(36)	33	12,884	33	12,884	2	8,840
INSTRUMENTS, OPTICAL GOODS, TIME PIECES(38)	33	12,532	31	12,825	0	0
NONDURABLE GOODS (20-23,26-31)	34	11,350	31	11,698	3	9,187
FOOD AND KINDRED PRODUCTS (20)	5	8,981	4	9,058	2	8,580
TEXTILE MILL PRODUCTS (22)	7	16,458	6	17,982	1	10,400
APPAREL AND OTHER FINISHED PROD., FAB. (23)	4	7,280	4	7,280	0	0
CHEMICALS AND ALLIED PRODUCTS (28)	10	12,337	10	12,337	0	0
RUBBER AND MISC. PLASTICS PRODUCTS (30)	6	10,598	6	10,598	0	0
LEATHER AND LEATHER PRODUCTS (31)	2	7,644	1	7,800	0	0
TOTAL TRANS., COMM., ELEC., GAS, SAN. SVC (40-49)	1	7,280	1	7,280	1	7,280
MOTOR FREIGHT TRANSPORT. AND WAREHOUS. (42)	1	7,280	1	7,280	1	7,280
TOTAL WHOLESALE TRADE (50-51)	8	8,515	2	9,100	2	9,100
WHOLESALE TRADE--DURABLE GOODS (50)	8	8,515	2	9,100	2	9,100
TOTAL RETAIL TRADE (52-59)	33	8,523	26	8,246	5	9,206
BLDG. MAT., HW, GAR. SUP., MOB.HM DEAL(52)	2	10,660	1	9,360	0	0
GENERAL MERCHANDISE STORES (53)	19	7,890	14	7,284	1	10,878
AUTOMOTIVE DEALERS AND GAS SVC. STATION(55)	6	10,591	6	10,591	2	10,400
EATING AND DRINKING PLACES (58)	6	7,748	5	7,904	2	7,176
TOTAL FINANCE, INSURANCE, AND REAL ESTATE (60-67)	5	8,320	5	8,320	0	0
INSURANCE (63)	1	0	1	0	0	0
REAL ESTATE (65)	4	8,320	4	8,320	0	0

TABLE 6--TOTAL ES JOB BANK OPENINGS AND AVERAGE PAY
BY SELECTED INDUSTRY GROUP
LOWELL MASSACHUSETTS
MARCH 1981

SELECTED INDUSTRY GROUP	OPENINGS AVAILABLE		OPENINGS UNFILLED		OPENINGS UNFILLED 30 DAYS	
	TOTAL	AVERAGE PAY	TOTAL	AVERAGE PAY	TOTAL	AVERAGE PAY
TOTAL SERVICES (70-89)	72	$ 8,227	50	$ 8,551	20	$ 8,952
BUSINESS SERVICES (73)	47	7,538	29	7,792	13	7,966
AUTOMOTIVE REPAIR, SERVICES, & GARAGES (75)	5	10,479	5	10,479	4	11,019
MISCELLANEOUS REPAIR SERVICES (76)	4	10,400	2	10,400	1	10,400
HEALTH SERVICES (80)	12	9,117	11	9,234	2	10,504
EDUCATIONAL SERVICES (82)	1	8,320	0	0	0	0
SOCIAL SERVICES (83)	2	9,500	2	9,500	0	0
PRIVATE HOUSEHOLDS (88)	1	7,280	1	7,280	0	0